

SECTION 206-05 Parking Brake and Actuation

VEHICLE APPLICATION:2006.0 Fiesta


CONTENTS

PAGE

CONNECTORS

Parking Brake Switch.....	206-05-2
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 1 31S-GE44 BK-RD WA 0.75

81AG-14488-ACA

C-340

TO PARKING BRAKE SWITCH

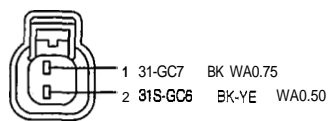
HARNESS14K024

SECTION 206-06 Hydraulic Brake Actuation

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Low Brake Fluid Warning Indicator Switch.....	206-06-2





XR3T-14A464-AA

C-305

TO ~~BRAKE~~ FLUIDLEVEL SWITCH

HARNESS 14401

SECTION 206-09A Anti-Lock Control

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

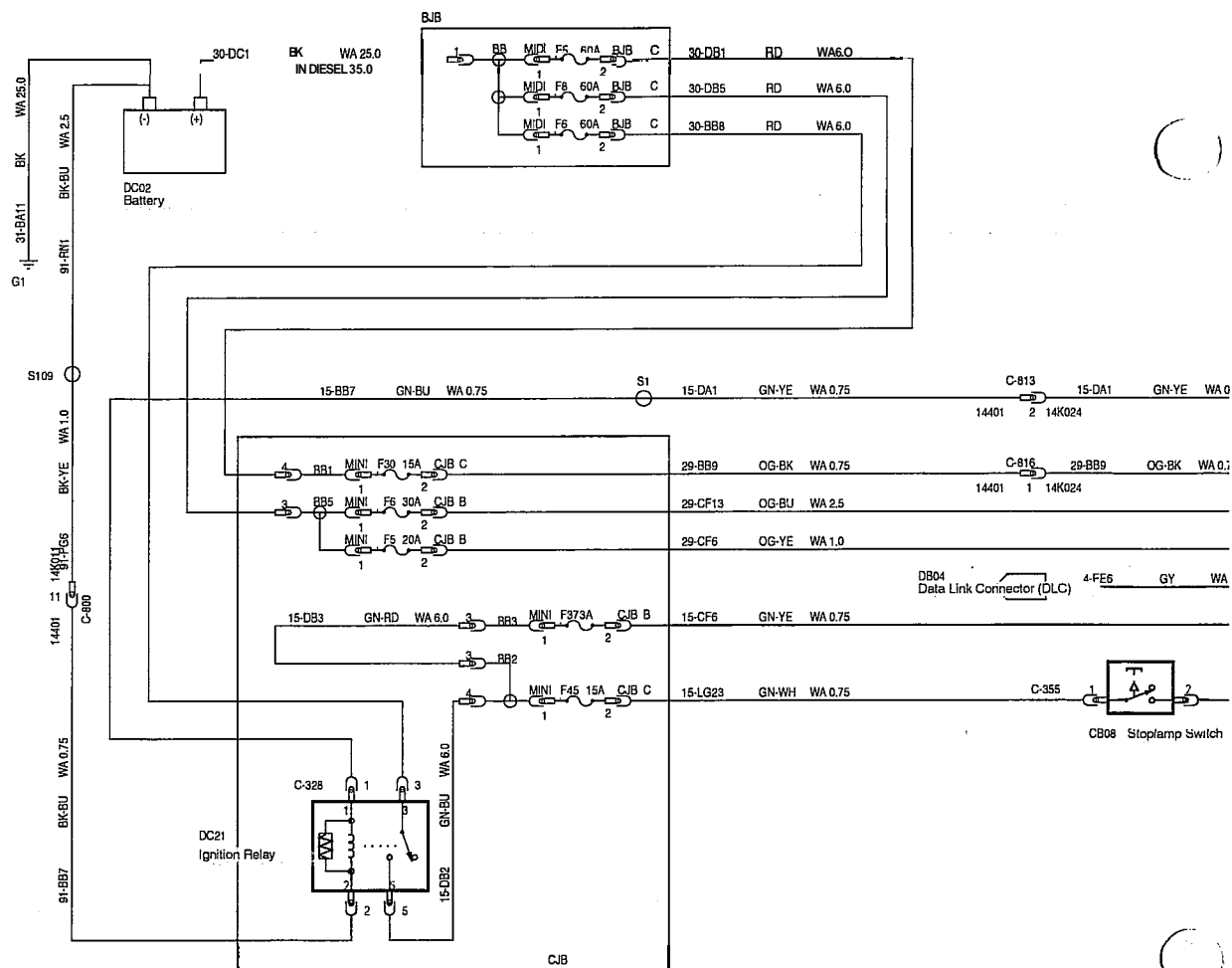
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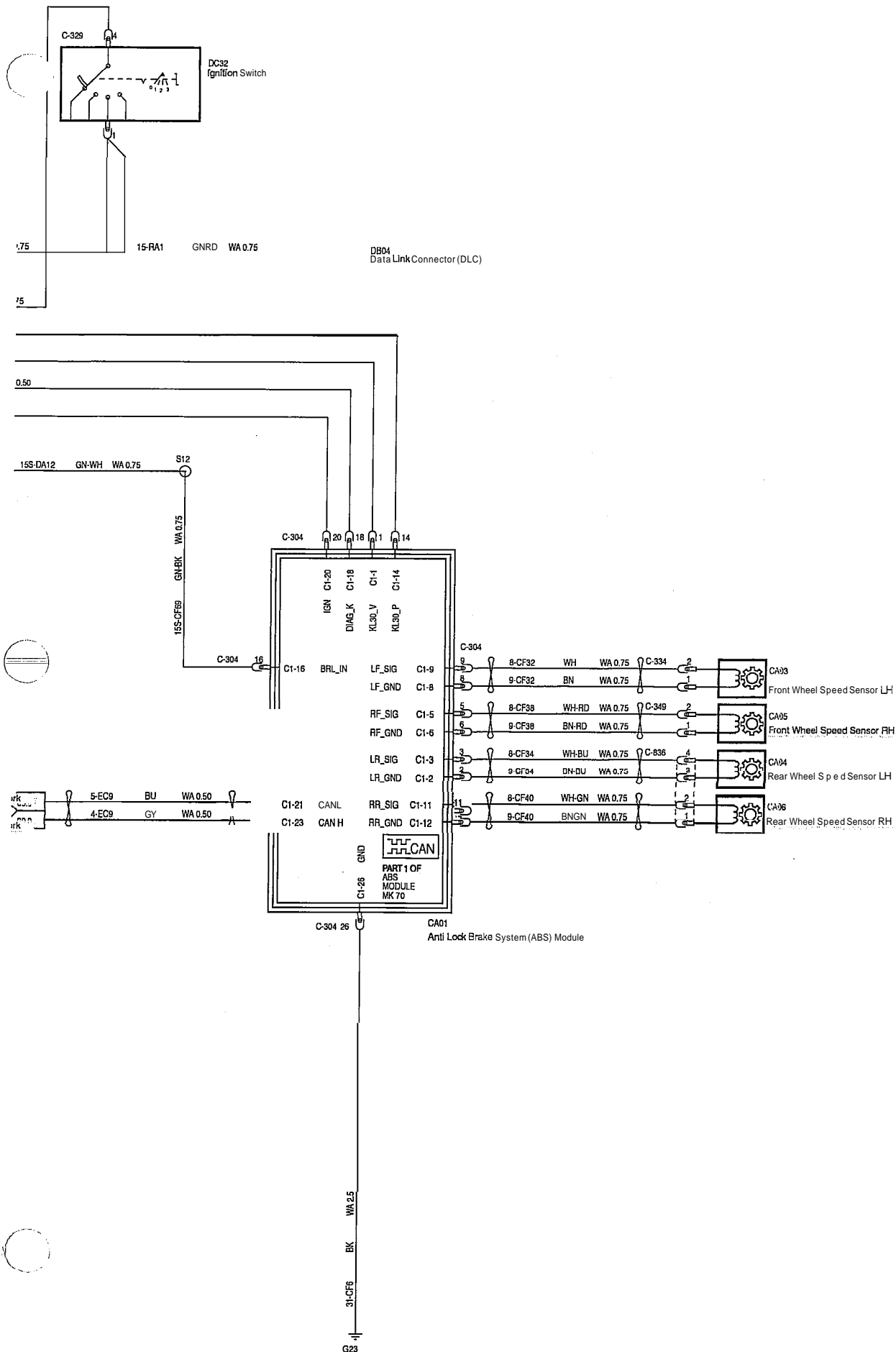
SCHEMATICS

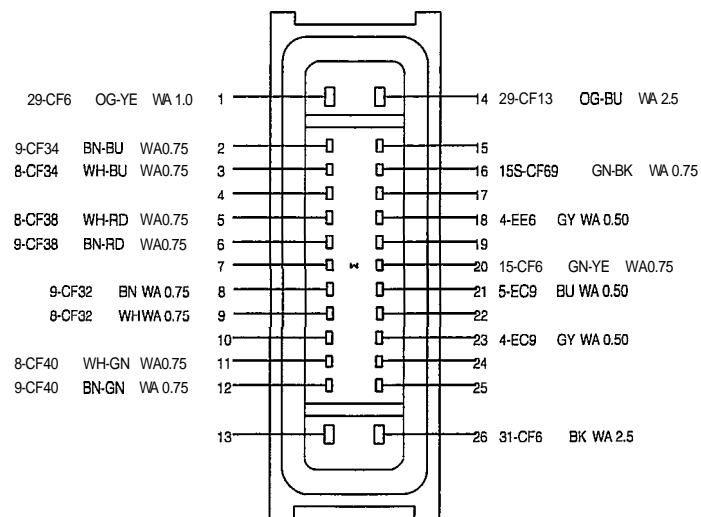
Anti-Lock Control..... 206-09A-2

CONNECTORS

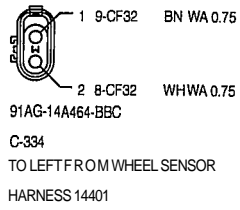
Anti-Lock Brake System (ABS) Module..... 206-09A-4
Front Wheel Speed Sensor LH..... 206-09A-5
Front Wheel Speed Sensor RH..... 206-09A-6
Anti-Lock Brake System (ABS) Module..... 206-09A-7

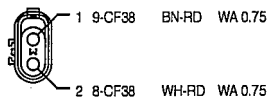






3M5T-14A464-ZPD(XXX)
 G304
 TO ABS MODULE MK70
 HARNESS14401



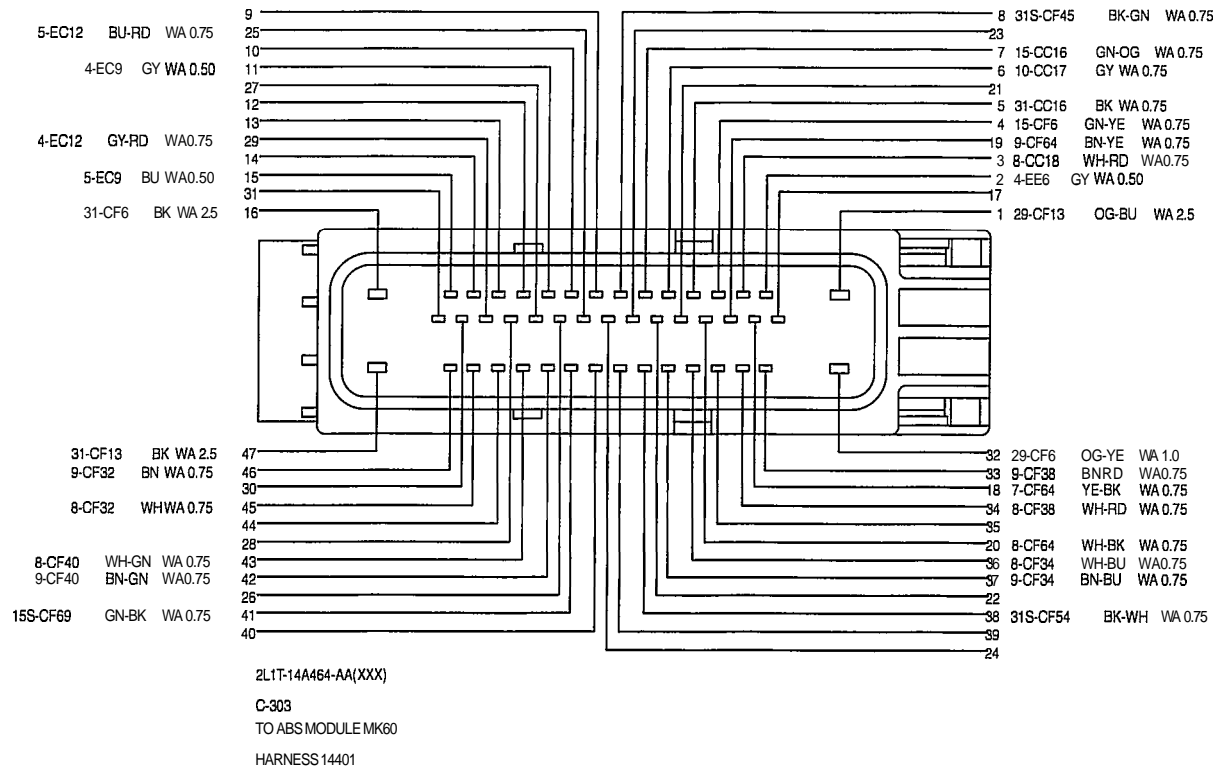


91AG-14A464-BBC

C-349

TO RIGHT FRONT WHEEL SENSOR

HARNESS 14401



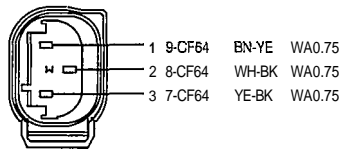


SECTION 206-09B Anti-Lock Control - Stability Assist

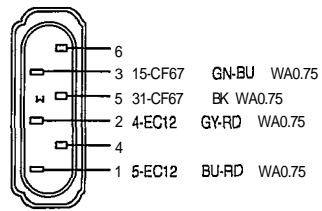
VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SCHEMATICS	
Anti-Lock Control - Stability Assist.....	206-09B-2
CONNECTORS	
Brake Master Cylinder Primary Pressure Transducer.....	206-09B-4
Yaw Rate Sensor.....	206-09B-5





98AG-14A464-RCA
C-684
TO PRIMARY BRAKE PRESSURE SENSOR
HARNESS 14401



98AG-14A464-RFA

C-688

TO YAWRATE ACCELERATION

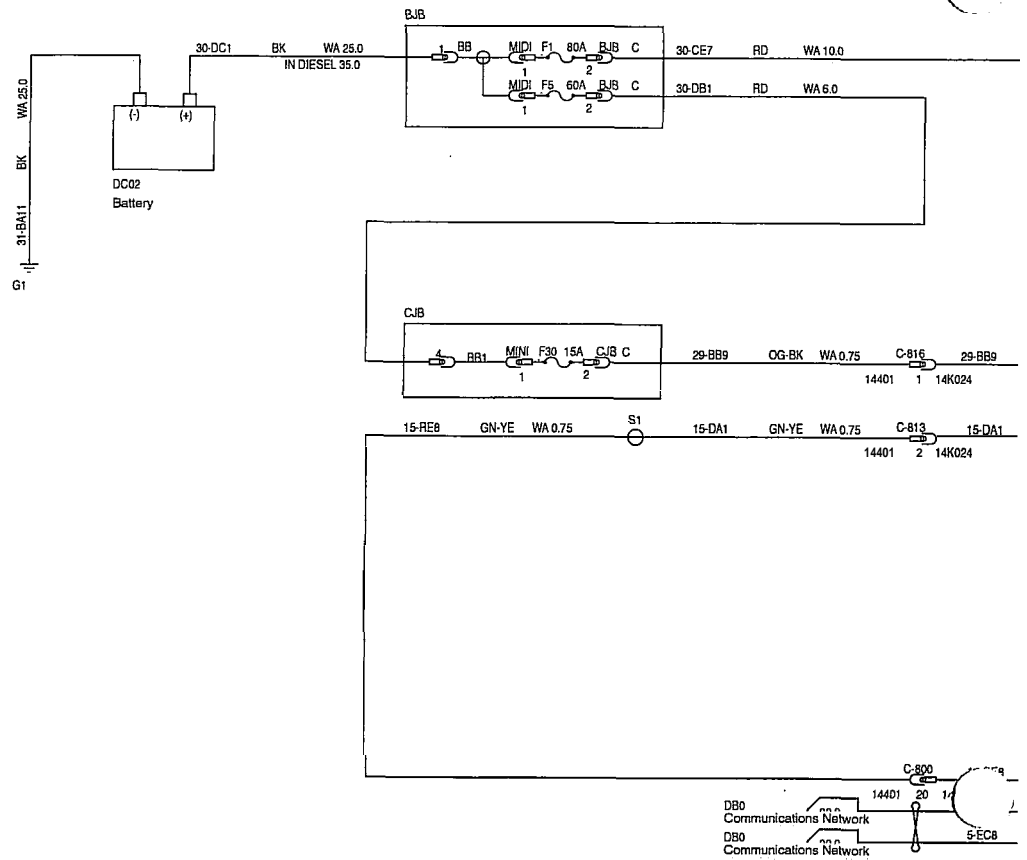
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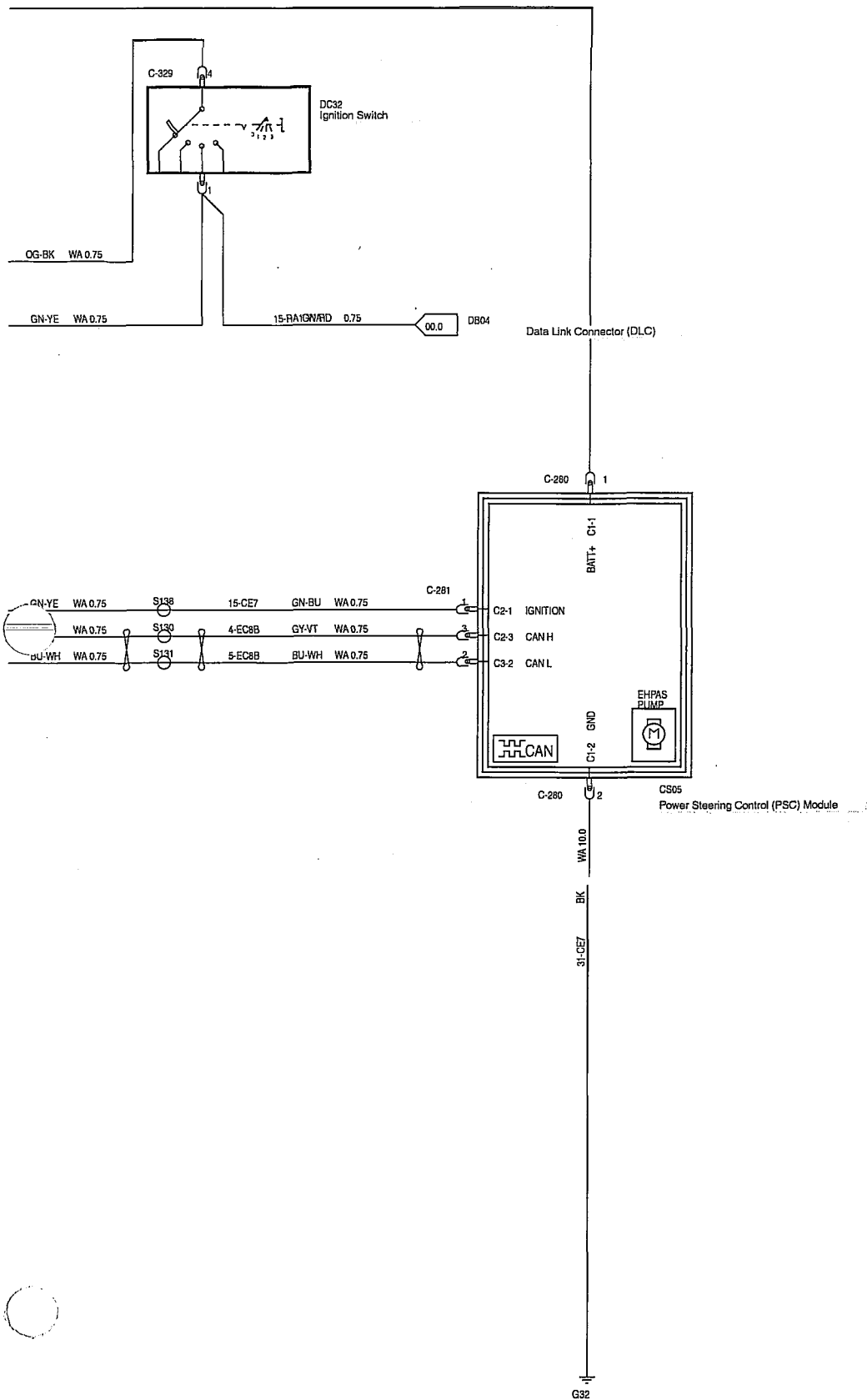


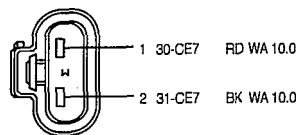
SECTION 211-02 Power Steering

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SCHEMATICS	
Electro-Hydraulic Power Steering (EHPS).....	211-02-2
CONNECTORS	
Power Steering Control (PSC) Module.....	211-02-4
Power Steering Control (PSC) Module.....	211-02-5







1 30-CE7 RD WA 10.0

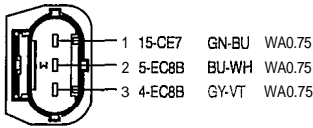
2 31-CE7 BK WA 10.0

256T-14A464-HBC

C-280

TO EHPAS MODULE

HARNESS 14K011



3M5T-14A464-GCC

C-281

TO EHPAS MODULE

HARNESS 14K011



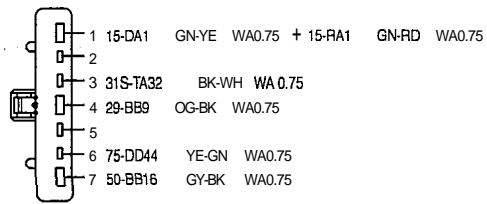


SECTION 211-05 Steering Column Switches

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Ignition Switch.....	211-05-2
Steering Column Multifunction Switch.....	211-05-3
Hazard Flasher Switch.....	211-05-4
Ignition Relay.....	211-05-5
Hazard Flasher Switch.....	211-05-6

PIN 1 => 15-RA1 GN-RD0.75 WA + 15-DA1 GN-YE 0.75 WA

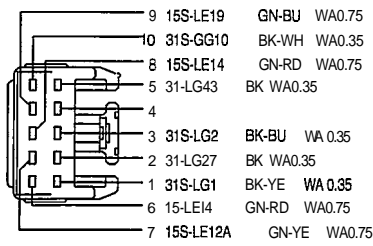


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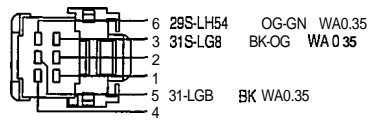
C-329

TO IGNITION SWITCH

HARNESS 14K024



4S7T-14489-VJA
C-357
TO MULTIFUNCTION SIGNAL SWITCH
HARNESS14K024



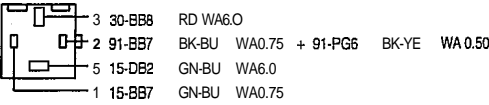
2S6T-14489-FA

C-321

TO HAZARD SWITCH

HARNESS 14K024

PIN2 => 91-PG6 BK-YE 0.50 WA + 91-BB7 BK-BU 0.75 WA

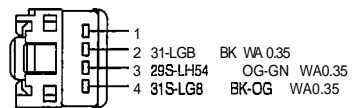


2S6T-14A481-CB

C-328

TO IGNITION RELAY

HARNESS 14401



1L2T-14489-GB

C-341

TO HAZARD SWITCH

HARNES 14K024

SECTION 303-03A Engine Cooling — 1.4L Duratorq-TDCi (DV) Diesel

VEHICLE APPLICATION:2006.0 Fiesta

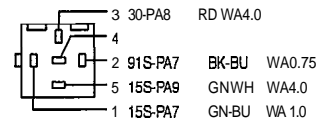
CONTENTS

PAGE

CONNECTORS

Cooling Fan Relay.....	303-03A-2
Cooling Fan Resistor.....	303-03A-3
High Speed Cooling Fan Relay.....	303-03A-4
Cooling Fan Motor.....	303-03A-5

PIN 1 => 15S-PA7 GN-BU 0.75 WA
PIN 5 => 15S-PA6 GN-YE 4.0 WA

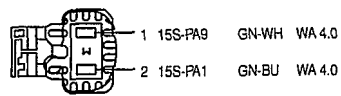


2S6T-14A481-BA

G407

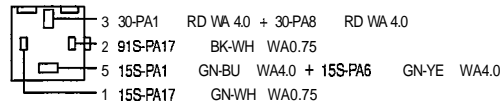
TO ENGINE COOLING FAN RELAY

HARNESS 14401 OR 12A522



94BG-14A464-ABA
C-408
TO ENGINE COOLINGFAN RESISTOR
HARNES14K011

PIN3 => 30-PA8 RD 4.0 WA + 30-PA1 RD 4.0 WA
PIN5 => 15S-PA6 GN-YE 4.0 WA + 15S-PA1 GNBU 4.0 WA



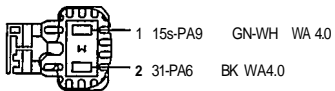
2S6T-14A481-CB

G412

TO HIGH SPEED ENGINE COOLING FAN RELAY

HARNESS 14K011 OR 12A522

PIN 1 => 15s-PA6 GN-YE 4.0 WA



94BG-14A464-ABA

C-406

TO ENGINE COOLING FAN MOTOR (A/C)

HARNESS 14K011 OR 12A522

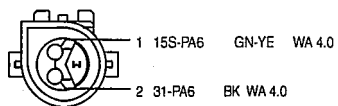




SECTION 303-03B Engine Cooling — 2.0L Duratec-HE

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Cooling Fan Motor.....	303-03B-2



89FG-14A464-EBA

C419

TO ENGINE COOLING FAN MOTOR (LESS A/C)

HARNESS14K011

SECTION 303-03C Engine Cooling — 1.6L Duratorq-TDCi (DV) Diesel

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Cooling Fan Relay.....	303-03C-2
Cooling Fan Resistor.....	303-03C-3
High Speed Cooling Fan Relay.....	303-03C-4
Cooling Fan Motor.....	303-03C-5

303-03C-2 Cooling Fan Relay
Information not available at this time

303-03C-3 Cooling Fan Resistor
Information not available at this time



303-03C-4 High Speed Cooling Fan Relay
Information not available at this time

303-03C-5 Cooling Fan Motor
Information not available at this time





SECTION 303-04A Fuel Charging and Controls — 1.3L Duratec-8V (Rocam)

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Fuel Pressure Regulator.....	303-04A-2
Fuel Injector 1.....	303-04A-3
Fuel Injector 2.....	303-04A-4
Fuel Injector 3.....	303-04A-5
Fuel Injector 4.....	303-04A-6

303-04A-2 Fuel Pressure Regulator
Information not available at this time

303-04A-3 Fuel Injector 1
Information not available at this time



303-04A-4 Fuel Injector 2
Information not available at this time

303-04A-5 Fuel Injector 3
Information not available at this time



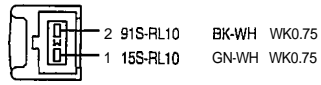
303-04A-6 Fuel Injector⁴

Information not available at this time

**SECTION 303-04B Fuel Charging and Controls — 1.25L
Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L
Duratec-I6V (Sigma)**

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Fuel Injector 1.....	303-04B-2
Fuel Injector 2.....	303-04B-3
Fuel Injector 3.....	303-04B-4
Fuel Injector 4.....	303-04B-5
Fuel Pressure Regulator.....	303-04B-6
Fuel Injector 1.....	303-04B-7
Fuel Injector 2.....	303-04B-8
Fuel Injector 3.....	303-04B-9
Fuel Injector 4.....	303-04B-10

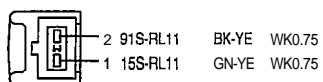


97AG-14A464-HBA

G765

TO INJECTOR1 VALVE SOLENOID (1.3)

HARNESS 9H589



97AG-14A464-HBA

C-766

TO INJECTOR 2 VALVE SOLENOID (1.3)

HARNESS 9H589



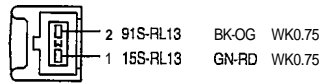
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1	15S-RL12	GN-BU	WK0.75

97AG-14A464-HBA

G767

TO INJECTOR 3 VALVE SOLENOID (1.3)

HARNESS 9H589

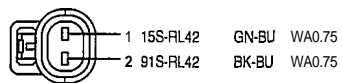


97AG-14A464-HBA

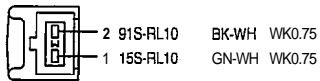
C-768

TO INJECTOR 4 VALVE SOLENOID (1.3)

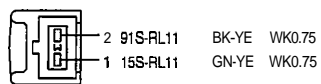
HARNESS 9H589



2S6T-14A464-DNA
C-705
TO FUEL PRESSURE REGULATOR
HARNES14K011



97AG-14A464-KBA
G479
TO INJECTOR 1 VALVE SOLENOID(1.4/1.6)
HARNESS9H589

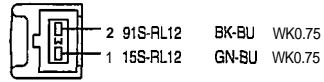


97AG-14A464-KBA

C-480

TO INJECTOR 2 VALVE SOLENOID (1.411.6)

HARNESS 9H589



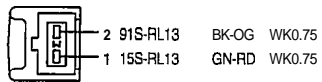
97AG-14A464-KBA

C-481

TO INJECTOR 3 VALVE SOLENOID (1.4/1.6)

HARNESS9H589





97AG-14A464-KBA

C-482

TO INJECTOR 4 VALVE SOLENOID (1.411.6)

HARNESS 9H589

SECTION 303-04C Fuel Charging and Controls — 1.4L Duratorq-TDCi (DV) Diesel

VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

PAGE

CONNECTORS

Fuel Pressure Regulator.....	303-04C-2
Fuel Injector 1.....	303-04C-3
Fuel Injector 2.....	303-04C-4
Fuel Injector 3.....	303-04C-5
Fuel Injector 4.....	303-04C-6
Fuel Metering Valve.....	303-04C-7
Fuel Heater.....	303-04C-8

303-04C-2 Fuel Pressure Regulator
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303-04C-3 Fuel Injector 1
Information not available at this time

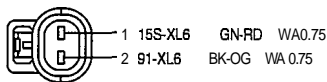


303-04C-4 Fuel Injector 2
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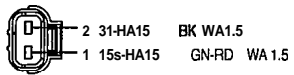
303-04C-5 Fuel Injector 3
Information not available at this time



303-04C-6 Fuel Injector 4
Information not available at this time



2S6T-14A464-DJA
C-455
TO INTAKE AIR THROTTLE VALVE SOLENOID (DIESEL IV E0BD)
HARNESS14K011



1M5T-14A464-PCA

C-655

TO DIESEL FUEL HEATER

HARNES14K011

SECTION 303-04D Fuel Charging and Controls - Turbocharger — 1.4L Duratorq-TDCi (DV) Diesel

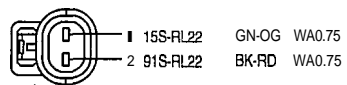
VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

PAGE

CONNECTORS

Turbocharger Variable Vane Actuator..... 303-04D-2



2S6T-14A464-DLA

G749

TO VARIABLE TURBO CONTROL VALVE SOLONOID

HARNES14K011

**SECTION 303-04E Fuel Charging and Controls — 2.0L
Duratec-HE (MI4)**

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Fuel Injector	303-04E-2
Fuel Injector 2.....	303-04E-3
Fuel Injector 3.....	303-04E-4
Fuel Injector 4.....	303-04E-5



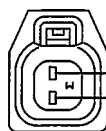
- | | | | |
|---|----------|-------|--------|
| 1 | 91S-RL10 | BK-WH | WK0.75 |
| 2 | 15S-RL10 | GN-WH | WK0.75 |

1X4T-14A464-AAB

C-261

TO INJECTOR 1 VALVE SOLENOID (ST150)

HARNESS 12A522



1	91S-RL11	BK-YE	WK0.75
2	15S-RL11	GN-YE	WK0.75

1X4T-14A464-AAB

C-262

TO INJECTOR 2 VALVE SOLENOID (ST150)

HARNESS 12A522





- | | | | |
|---|----------|-------|--------|
| 1 | 91S-RL12 | BK-BU | WK0.75 |
| 2 | 15S-RL12 | GN-BU | WK0.75 |

1X4T-14A464-AAB

C-263

TO INJECTOR 3 VALVE SOLENOID (ST150)

HARNESS 12A522



1	91S-RL13	BK-OG	WK0.75
2	15S-RL13	GN-RD	WK0.75

1X4T-14A464-AAB

C-264

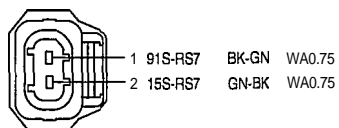
TO INJECTOR 4 VALVE SOLENOID (ST150)

HARNES12A522

SECTION 303-04F Fuel Charging and Controls — 1.6L Duratorq-TDCi (DV) Diesel

VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Fuel Metering Valve.....	303-04F-2
Fuel Metering Valve.....	303-04F-3
Fuel Injector 1.....	303-04F-4
Fuel Injector 2.....	303-04F-5
Fuel Injector 3.....	303-04F-6
Fuel Injector 4.....	303-04F-7

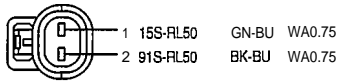


1L2T-14A464-TA

C242

TO FUEL PUMP METERING UNIT

HARNESS 14K011

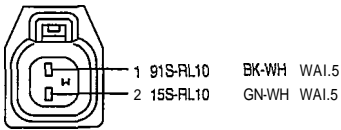


2S6T-14A464-DPA

G704

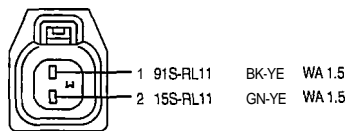
TO FUEL FLOW REGULATOR VALVE SOLENOID

HARNESS14K011



3S7T-14A464-BA_DUMMY
C-270
TO INJECTOR 1 VALVE SOLONOID (DV6)
HARNESS 14K01



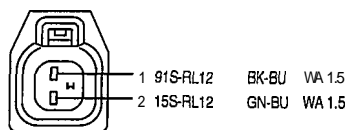


3S7T-14A464-BA_DUMMY

C-271

TO INJECTOR 2 VALVE SOLENOID (DV6)

HARNESS 14K011



3S7T-14A464-BA_DUMMY

C272

TO INJECTOR 3 VALVE SOLENOID (DV6)

HARNESS 14K011





- | | | | |
|---|----------|-------|-------|
| 1 | 91S-RL13 | BK-OG | WA1.5 |
| 2 | 15S-RL13 | GN-RD | WA1.5 |

3S7T-14A464-BA_DUMMY

G273

TO INJECTOR 4 VALVE SOLENOID (DV6)

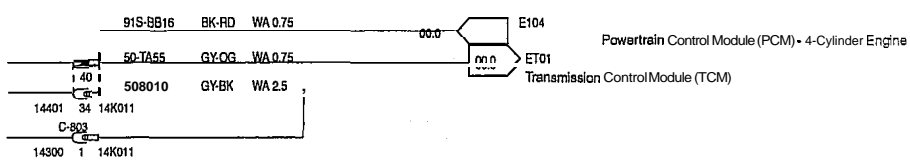
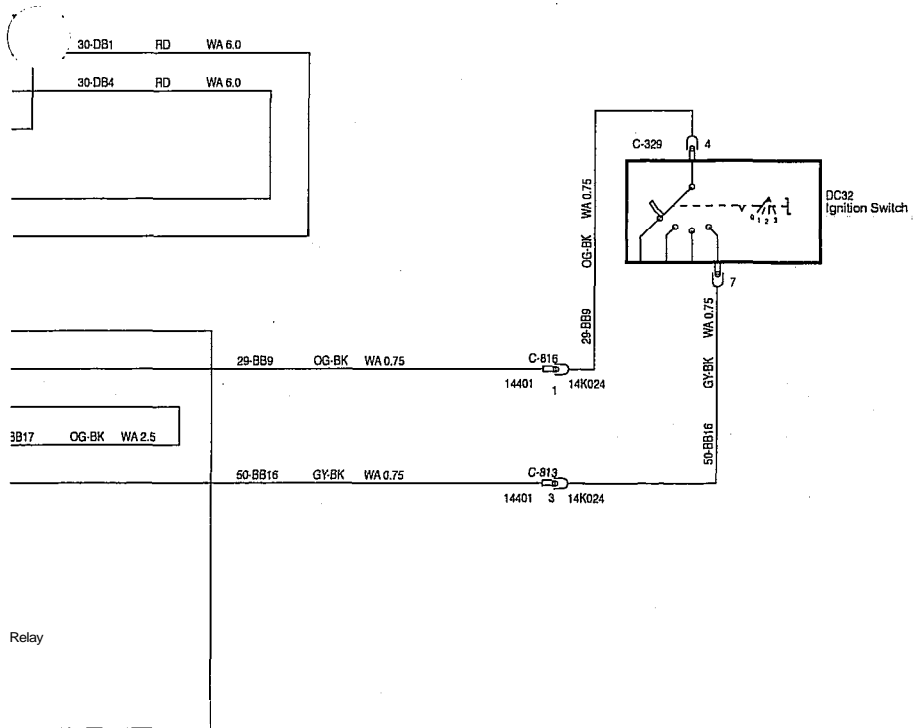
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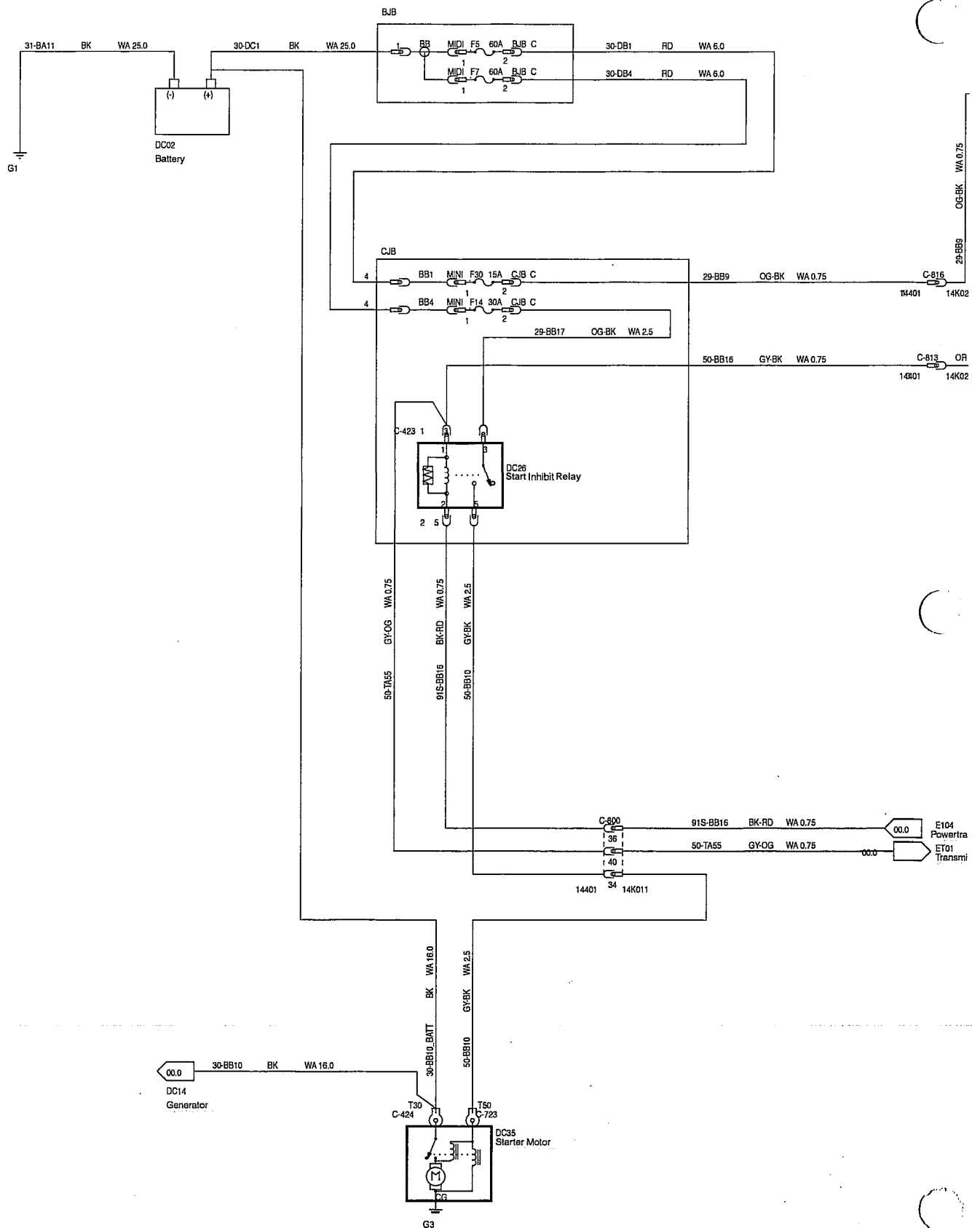
SECTION 303-06 Starting System

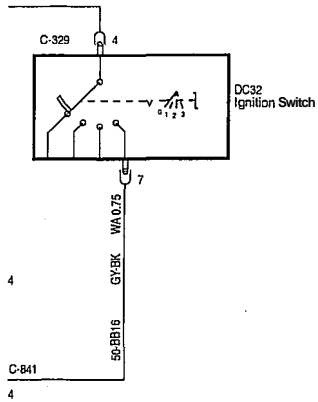
VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SCHEMATICS	
Starting System — 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	303-06-2
Starting System — 1.4L Duratorq-TDCi (DV) Diesel/1.6L Duratorq-TDCi (DV) Diesel.....	303-06-4
Starting System — Vehicles With: 4-Speed Automatic Transmission (AW81-40).....	303-06-6
CONNECTORS	
Start Inhibit Relay.....	303-06-8
Starter Motor.....	303-06-9
Starter Motor.....	303-06-10

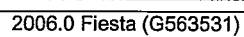


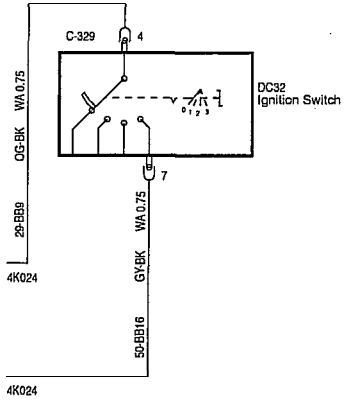






In Control Module (PCM) - 4-Cylinder Engine
 ssion Control Module (TCM)

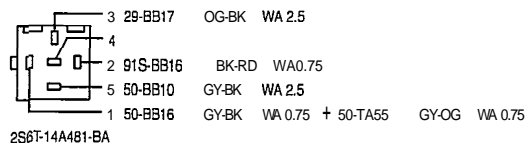




Transmission Range (TR) Sensor

Transmission Control Module (TCM)

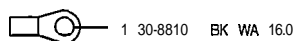
PIN 1 => 50-TA55 GY-OG 0.75 WA + 50-BB16 GY-BK 0.75 WA



C-423

TO STARTER INHIBIT RELAY

HARNES 14401




93BB-14463-AB

C-424

TO STARTER MOTOR



 150-BB10 GY-BK WA 4.0

93BB-14463-AB

G723

TO STARTER MOTOR

HARNESS14300

SECTION 303-07A Engine Ignition

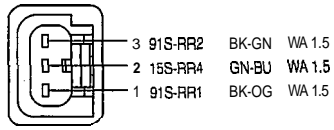
VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

CONNECTORS

Ignition Coil.....	303-07A-2
Ignition Coil.....	303-07A-3

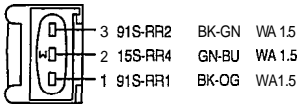


1W7F-14A464-LA

C-330

TO IGNITION TRANSFORMER(SIGMA)

HARNESS 14K011



89FG-14A464-HCB
C247
TO IGNITION TRANSFORMER (SOHC)
HARNESS 14K011

C

C

C

**SECTION 303-07B Glow Plug System — 1.4L
Duratorq-TDCi (DV) Diesel**

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Glow Plug 1.....	303-07B-2
Glow Plug 2.....	303-07B-3
Glow Plug 3.....	303-07B-4
Glow Plug 4.....	303-07B-5
Glow Plug Relay.....	303-07B-6

303-07B-2 Glow Plug 1

Information not available at this time

303-07B-3 Glow Plug 2
Information not available at this time

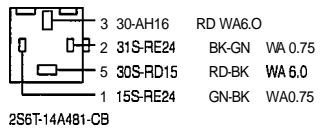


303-07B-4Glow Plug 3
Information not available at this time

303-07B-5 Glow Plug 4
Information not available at this time



PIN 1 => 15S-HA15 GN-RD 1.5 WA t 15S-RE24 GN-BK 1.5 WA



2S6T-14A481-CB

C-452

TO GLOW PLUG RELAY

HARNESS 14K011

SECTION 303-07C Engine Ignition — 2.0L Duratec-HE (MI4)

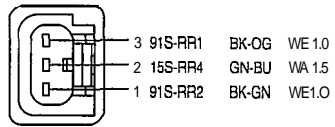
VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

PAGE

CONNECTORS

Ignition Coil..... 303-07C-2



1W7T-14A464-LA

C-246

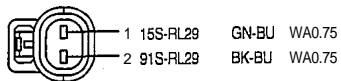
TO IGNITION TRANSFORMER (ST150)

HARNESS 12A522

SECTION 303-08A Engine Emission Control — 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Exhaust Gas Recirculation (EGR) Valve.....	303-08A-2
Electronic Exhaust Gas Recirculation (EGR) Valve.....	303-08A-3

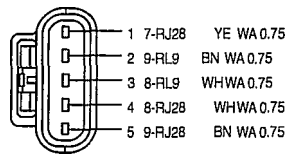


256T-14A464-DKA

C-657

TO VACUUM EGR VALVE SOLENOID

HARNESS14K011



4S6T-14A464-FA

C-459

TO ELECTRICAL EGR (DIESEL IV EOBD / DV6)

HARNESS14K011



**SECTION 303-08B Engine Emission Control — 1.4L
Duratorq-TDCi (DV) Diesel**

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Electronic Exhaust Gas Recirculation (EGR) Valve.....	303-08B-2



303-08B-2 Electronic Exhaust Gas Recirculation (EGR) Valve
Information not available at this time

SECTION 303-08C Engine Emission Control — 2.0L Duratec-HE (MI4)

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Electronic Exhaust Gas Recirculation (EGR) Valve.....	303-08C-2
Electronic Exhaust Gas Recirculation (EGR) Valve.....	303-08C-3

303-08C-2 Electronic Exhaust Gas Recirculation (EGR) Valve
Information not available at this time

303-08C-3 Electronic Exhaust Gas Recirculation (**EGR**) Valve
Information not available at this time



C

C

C

SECTION 303-08D Engine Emission Control — 1.6L Duratorq-TDCi (DV) Diesel

VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

PAGE

CONNECTORS

Electronic Exhaust Gas Recirculation (EGR) Valve..... 303-08D-2

303-08D-2 Electronic Exhaust Gas Recirculation (EGR) Valve
Information not available at this time

SECTION 303-13 Evaporative Emissions

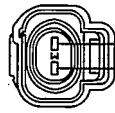
VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

CONNECTORS

Evaporative Emission Canister Vent Solenoid.....	303-13-2
Evaporative Emission Canister Purge Valve.....	303-13-3



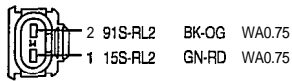
1	91S-RL2	BK-OG	WA 0.75
2	15S-RL2	GN-RD	WA 0.75

1S7T-14A464-HA

C-622

TO CANISTER PURGE VALVE SOLENOID

HARNESS 14K011 OR 9H589



3S7T-14A464-MA
C-265
TO SONIC PURGE VALVE SOLENOID (ST150)
HARNES 12A522

C

C

C

SECTION 303-14 Electronic Engine Controls

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

SCHEMATICS

Engine Control — 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	303-14-5
Engine Control — 1.4L Duratorq-TDCi (DV) Diesel. VIN Plate Emission Level Code: S....	303-14-9
Engine Control — 1.4L Duratorq-TDCi (DV) Diesel. VIN Plate Emission Level Code: 7....	303-14-13
Engine Control — 1.6L Duratec-16V (Sigma), Vehicles With: Automatic Transmission....	303-14-17
Engine Control — 1.6L Duratorq-TDCi (DV) Diesel.....	303-14-21
Engine Control — 2.0L Duratec-ST (M14).....	303-14-25

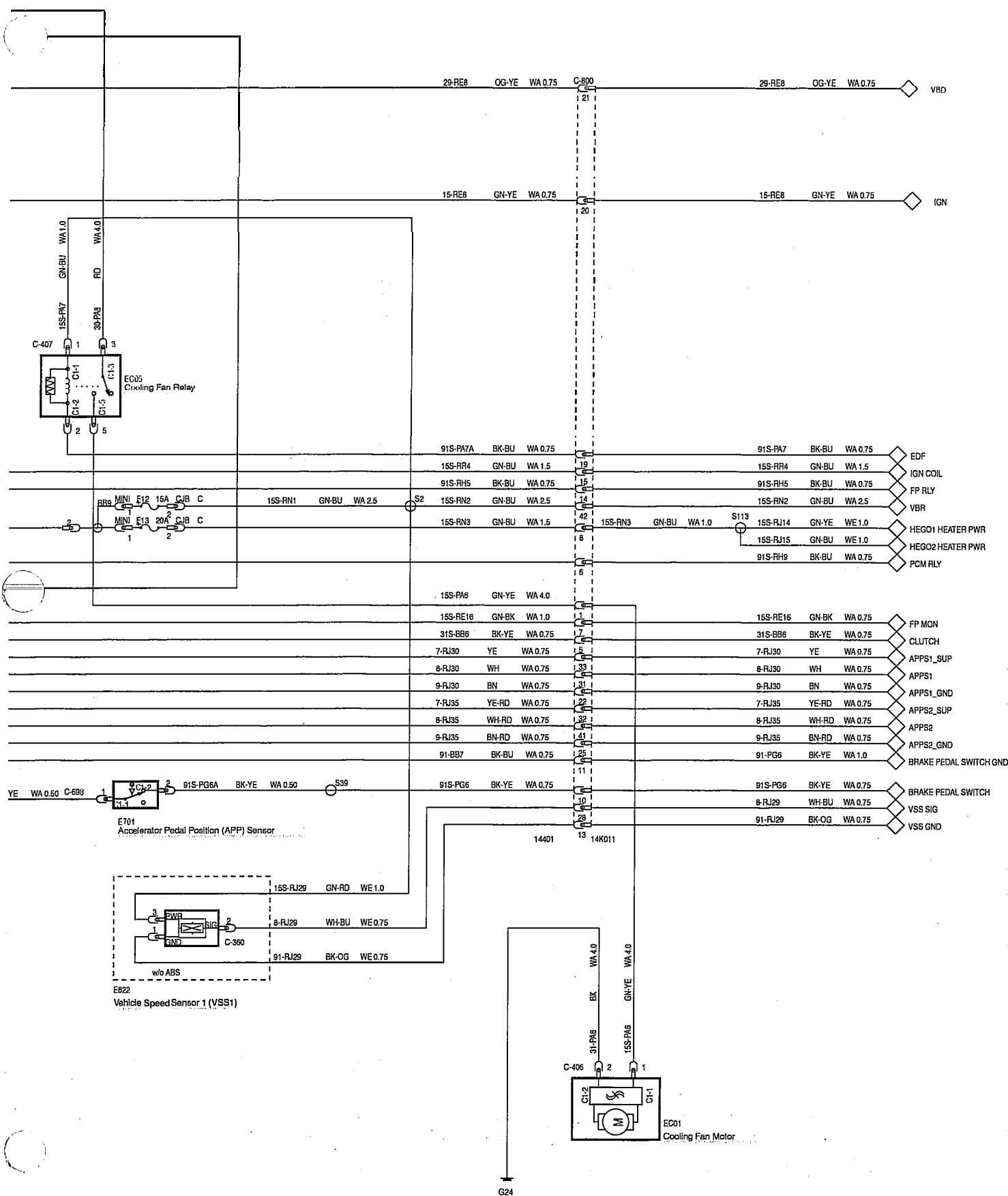
CONNECTORS

Accelerator Pedal Position (APP) Sensor.....	303-14-27
Turbocharger Boost Pressure Sensor.....	303-14-28
Brake Pedal Position (BPP) Switch.....	303-14-29
Camshaft Position (CMP) Sensor.....	303-14-30
Clutch Pedal Position (CPP) Switch.....	303-14-31
Crankshaft Position (CKP) Sensor.....	303-14-32
Throttle Position (TP) Sensor.....	303-14-33
Engine Coolant Temperature (ECT) Sensor.....	303-14-34
Fuel Rail Pressure (FRP) Sensor — 1.6L Duratorq-TDCi (DV) Diesel.....	303-14-35
Fuel Temperature Sensor.....	303-14-36
Heated Oxygen Sensor 1 (HO2S1) — 1.3L Duratec-8V (Rocam).....	303-14-37
Heated Oxygen Sensor 2 (HO2S2).....	303-14-38
Idle Air Control (IAC) Valve.....	303-14-39
Manifold Absolute Pressure (MAP) Sensor.....	303-14-40
Intake Air Temperature (IAT) Sensor.....	303-14-41
Knock Sensor (KS).....	303-14-42
Mass Air Flow (MAF) Sensor.....	303-14-43
Power Steering Pressure (PSP) Switch.....	303-14-44
Manifold Absolute Pressure (MAP) Sensor.....	303-14-45
Throttle Control Unit.....	303-14-46
Intake Air Temperature (IAT) Sensor.....	303-14-47
Powertrain Control Module (PCM) Relay.....	303-14-48
Powertrain Control Module (PCM) — 1.4L Duratorq-TDCi (DV) Diesel.....	303-14-49
Engine Oil Pressure (EOP) Switch.....	303-14-50
Vehicle Speed Sensor 1 (VSS1).....	303-14-51
Vehicle Speed Sensor 2 (VSS2).....	303-14-52
Heated Oxygen Sensor 1 (HO2S1) — 2.0L Duratec-ST (Zetec).....	303-14-53
Heated Oxygen Sensor 2 (HO2S2) — 2.0L Duratec-ST (Zetec).....	303-14-54
Camshaft Position (CMP) Sensor — 2.0L Duratec-ST (Zetec).....	303-14-55
Powertrain Control Module (PCM).....	303-14-56
Powertrain Control Module (PCM).....	303-14-57
Powertrain Control Module (PCM).....	303-14-58

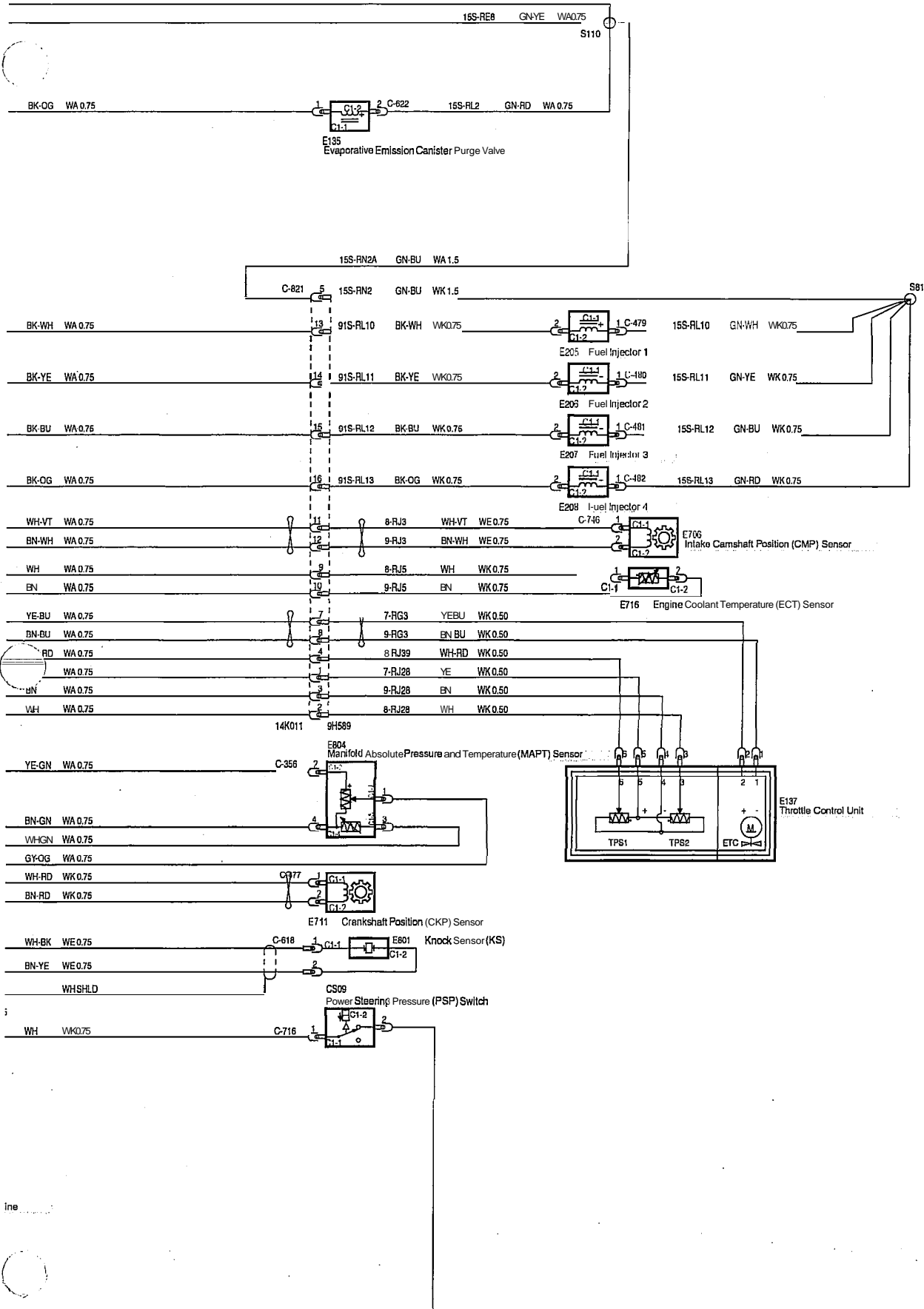
Powertrain Control Module (PCM).....	303-14-59
Powertrain Control Module (PCM).....	303-14-60
Powertrain Control Module (PCM).....	303-14-61
Powertrain Control Module (PCM).....	303-14-62
Powertrain Control Module (PCM).....	303-14-63
Powertrain Control Module (PCM).....	303-14-64
Powertrain Control Module (PCM).....	303-14-65
Powertrain Control Module (PCM).....	303-14-67
Throttle Control Unit.....	303-14-68
Mass Air Flow (MAF) Sensor.....	303-14-69
Engine Oil Pressure (EOP) Switch.....	303-14-70
Engine Oil Pressure (EOP) Switch.....	303-14-71
Engine Coolant Temperature (ECT) Sensor.....	303-14-72
Camshaft Position (CMP) Sensor.....	303-14-73
Camshaft Position (CMP) Sensor.....	303-14-74
Knock Sensor (KS).....	303-14-75
Crankshaft Position (CKP) Sensor.....	303-14-76
Throttle Position (TP) Sensor.....	303-14-77
Crankshaft Position (CKP) Sensor.....	303-14-78
Heated Oxygen Sensor 1 (HO2S1).....	303-14-79
Manifold Absolute Pressure and Temperature (MAPT) Sensor.....	303-14-80
Mass Air Flow (MAF) Sensor.....	303-14-81

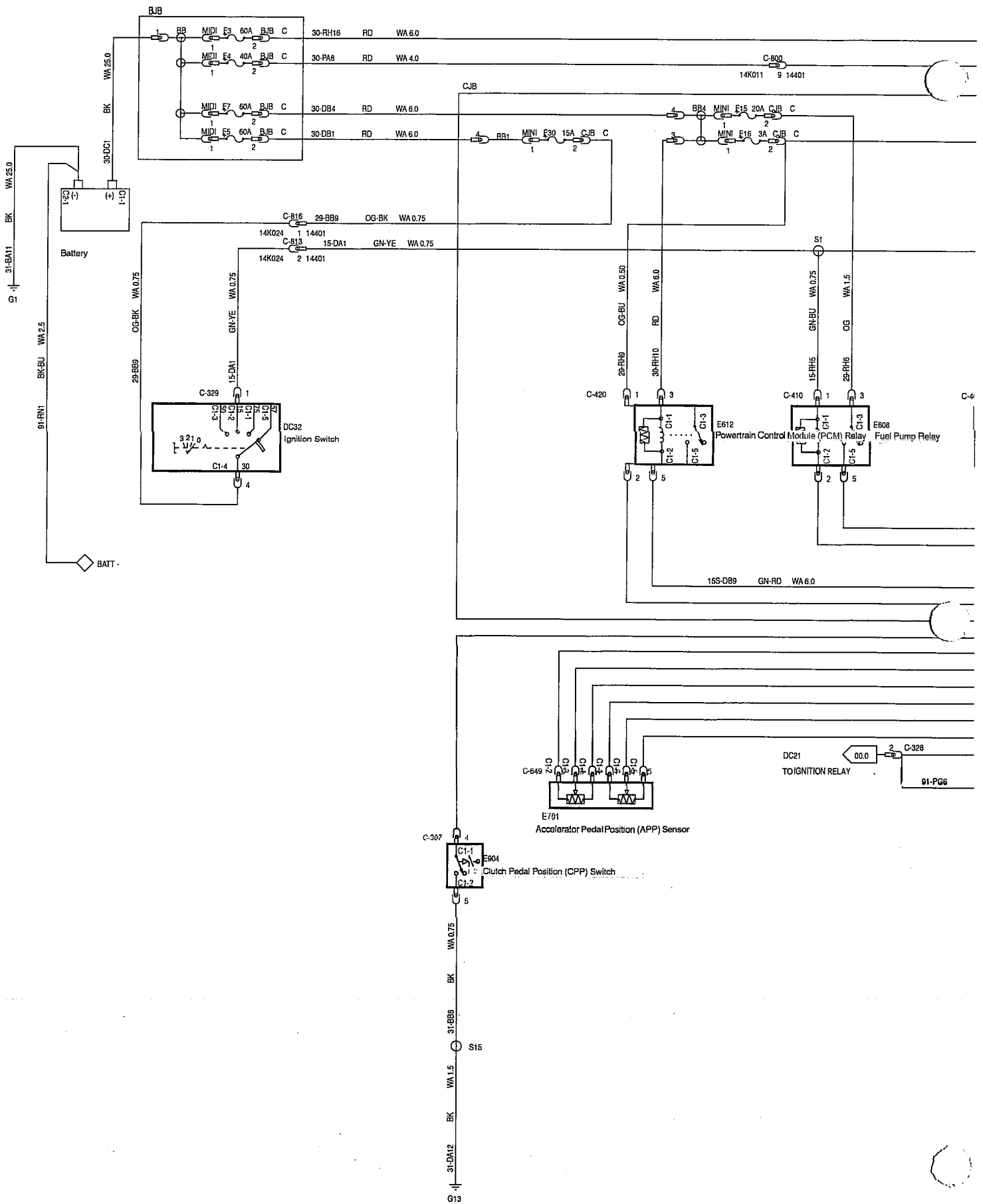


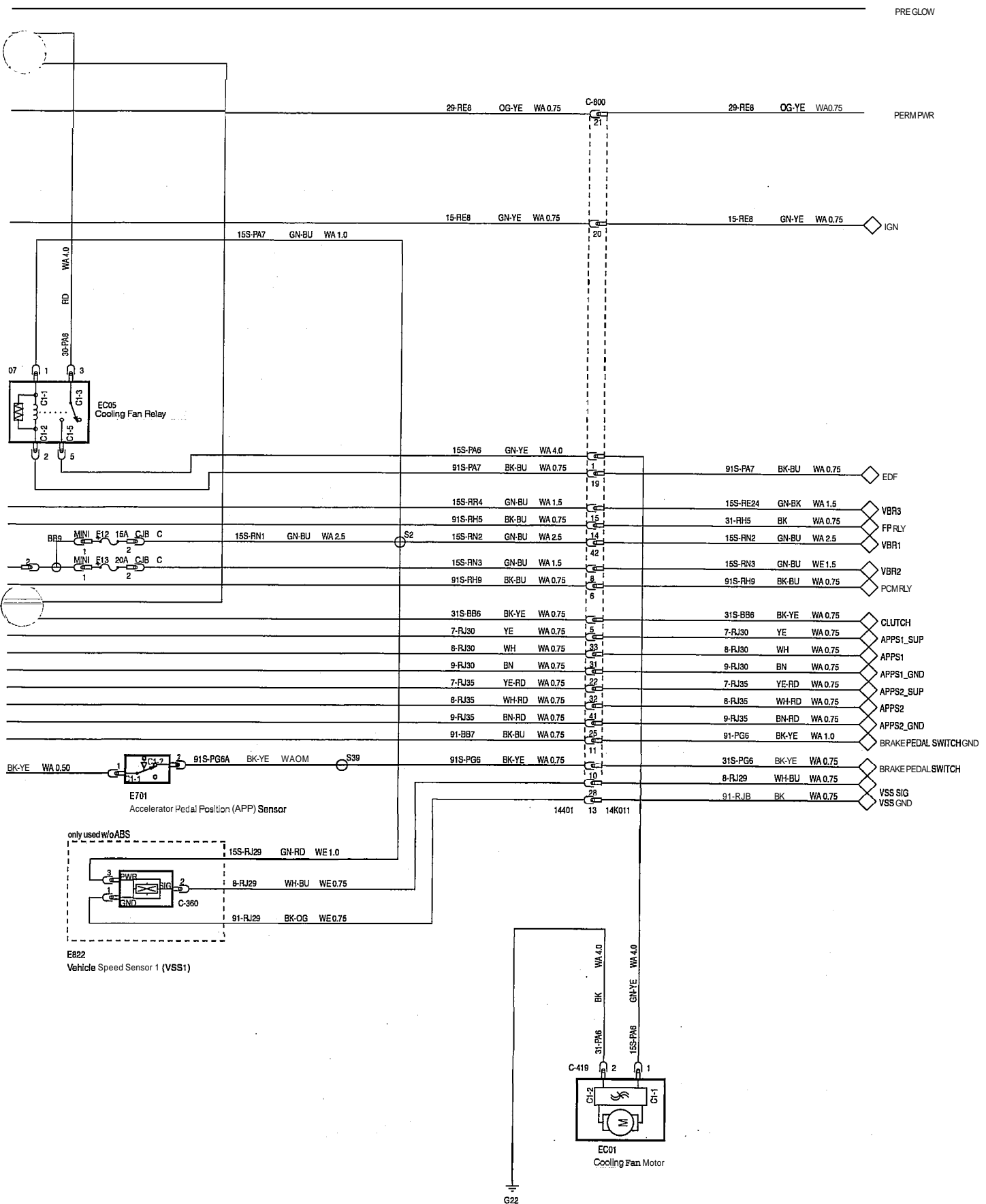


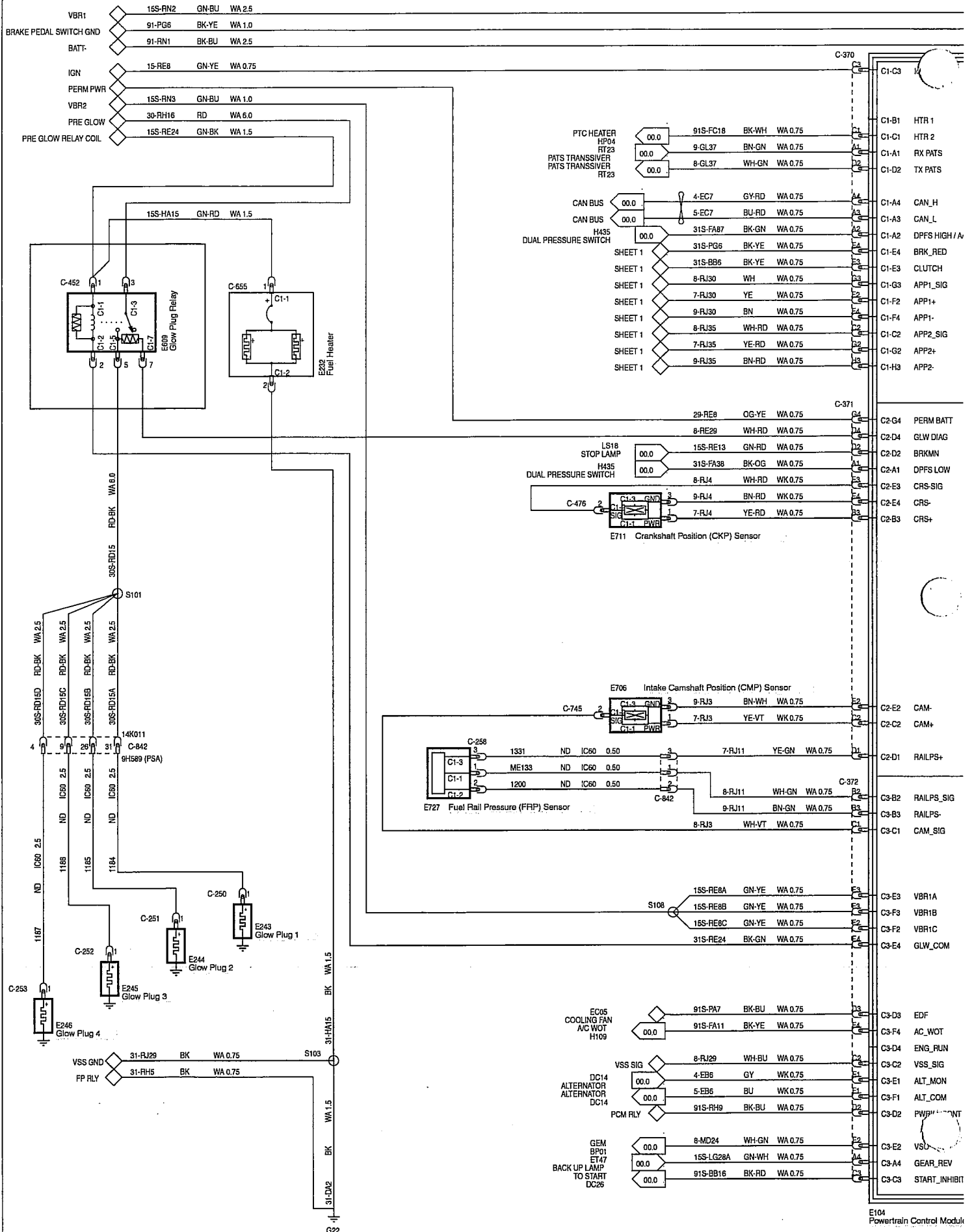


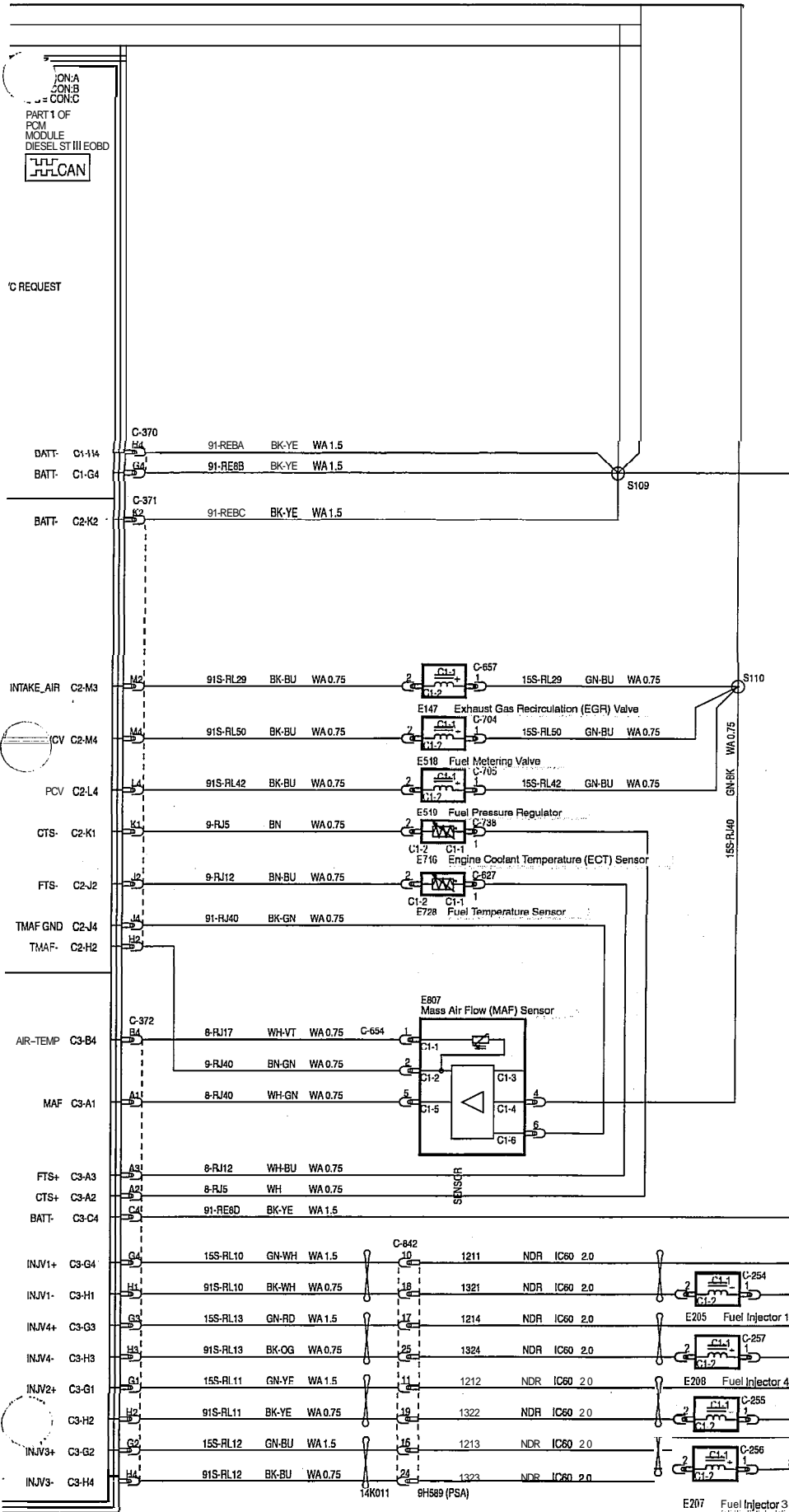




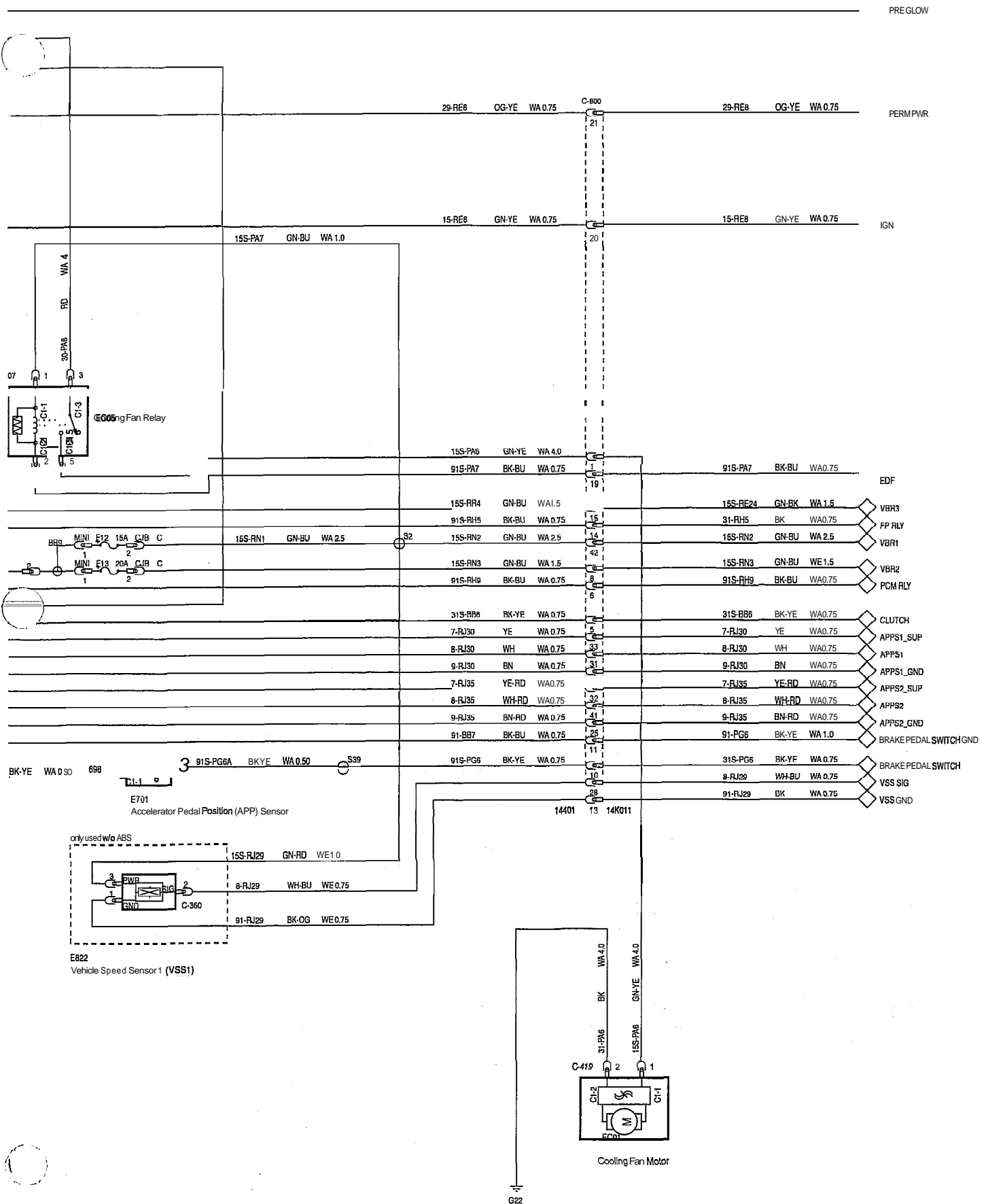


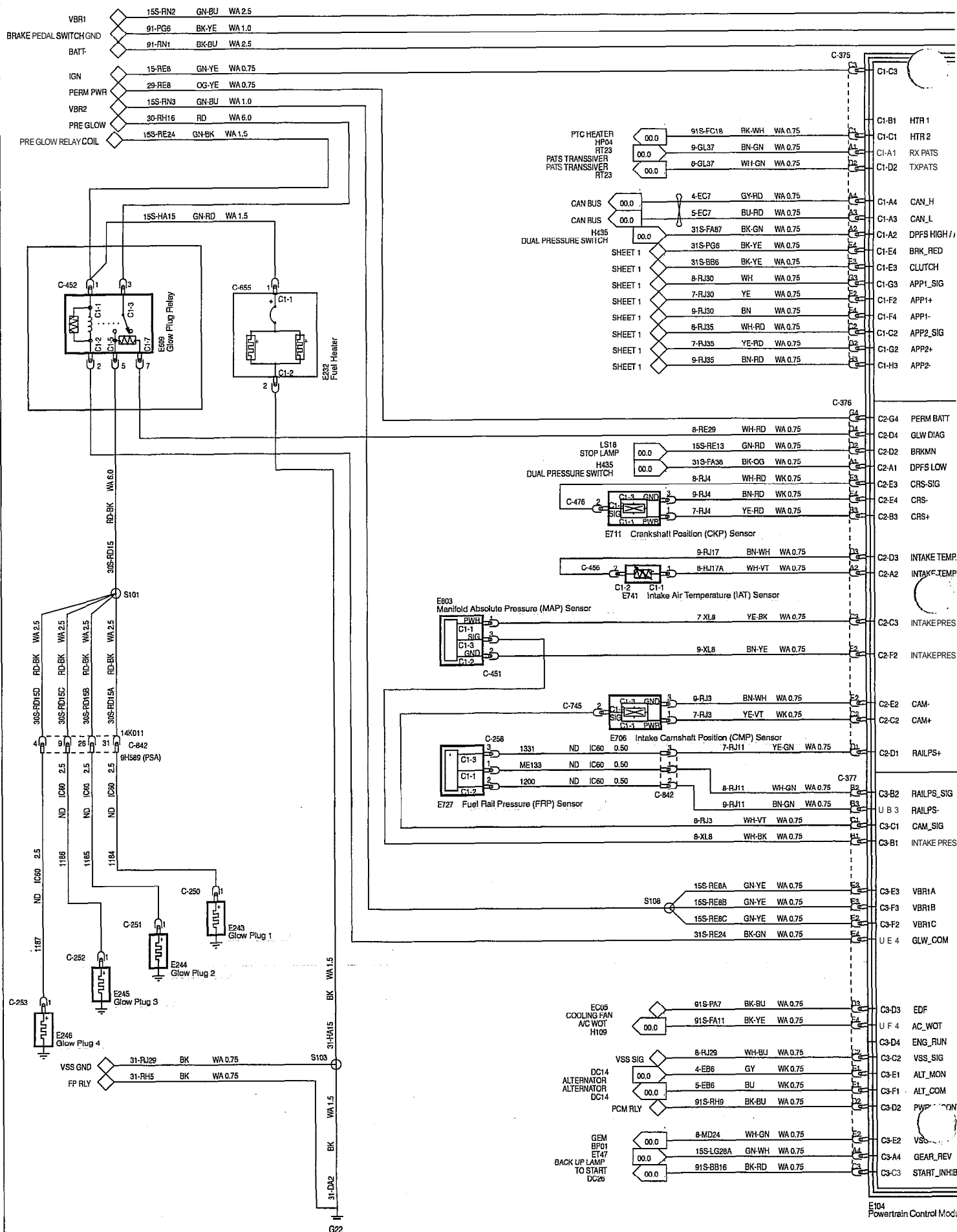


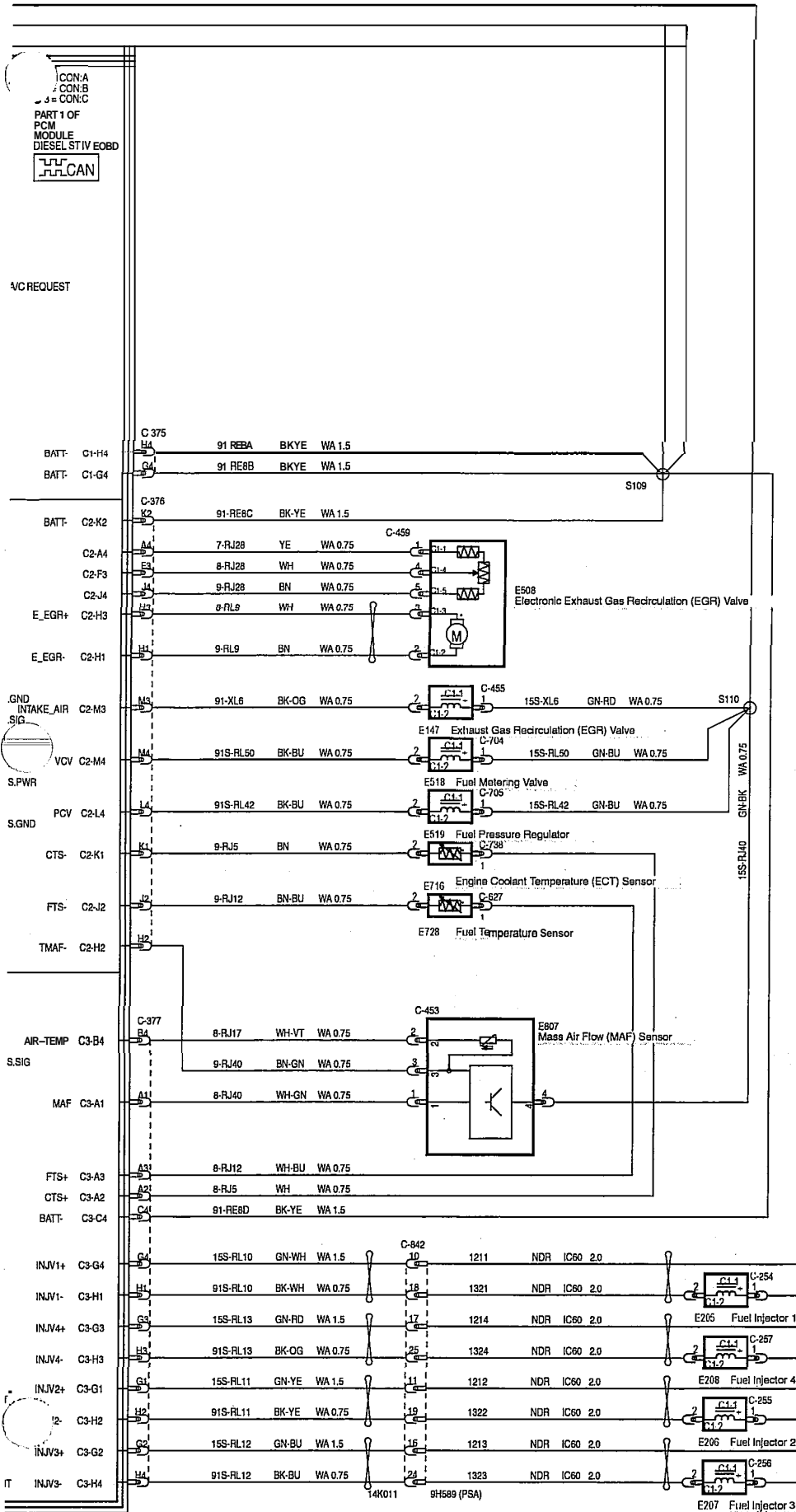




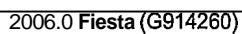
3 (PCM) - 4-Cylinder Engine



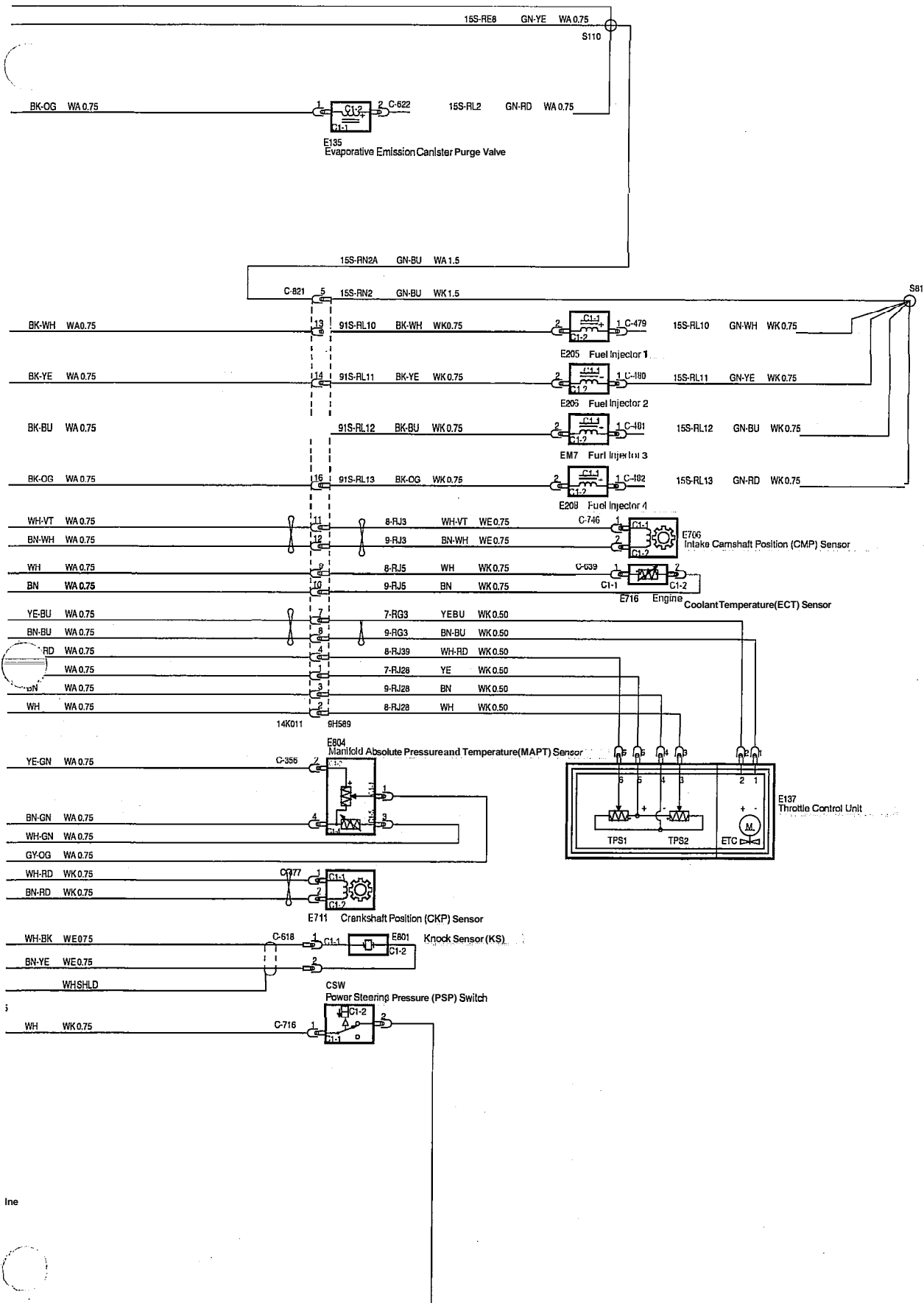




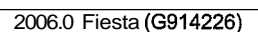
1a (PCM) - 4-Cylinder Engine



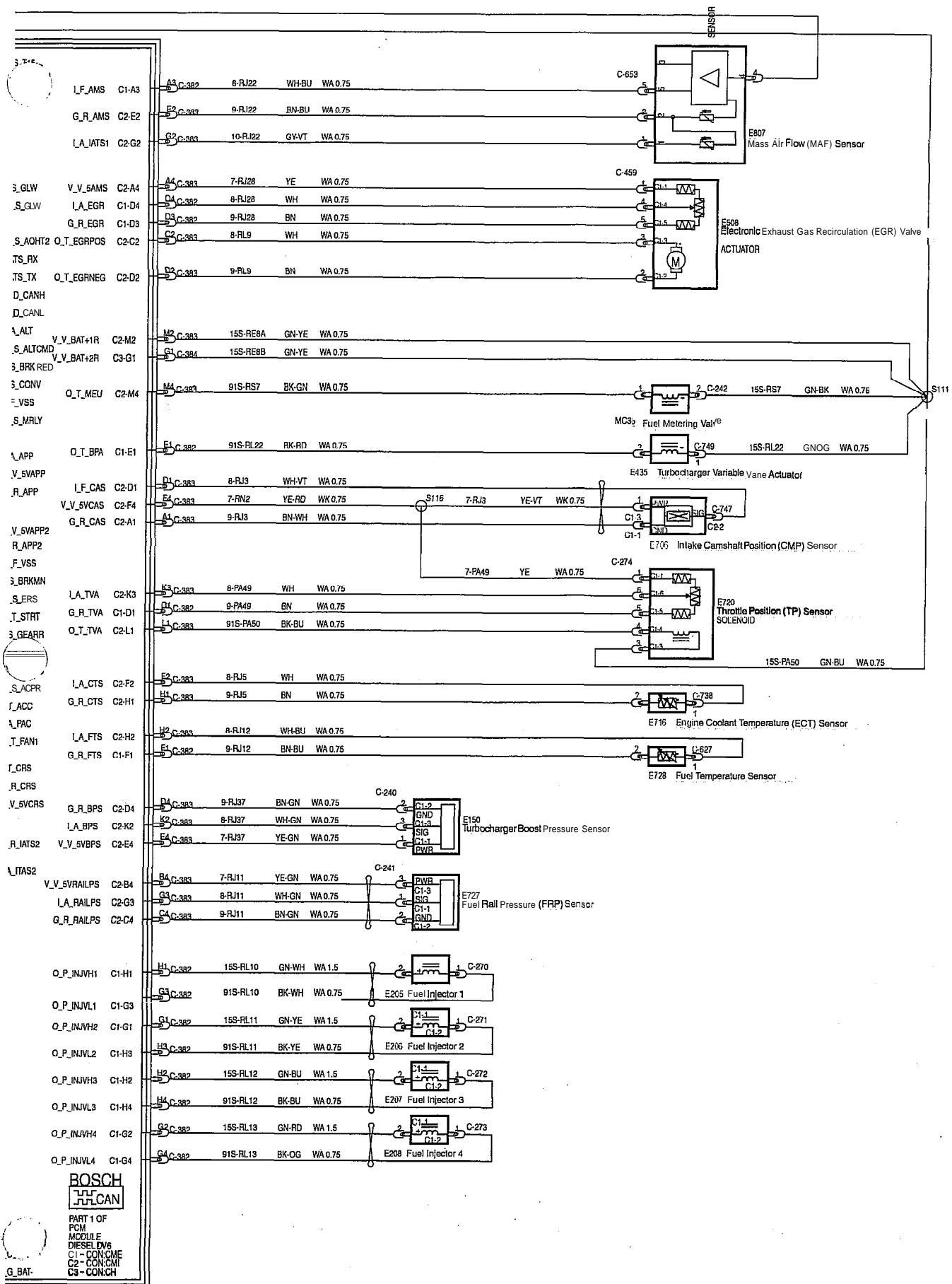






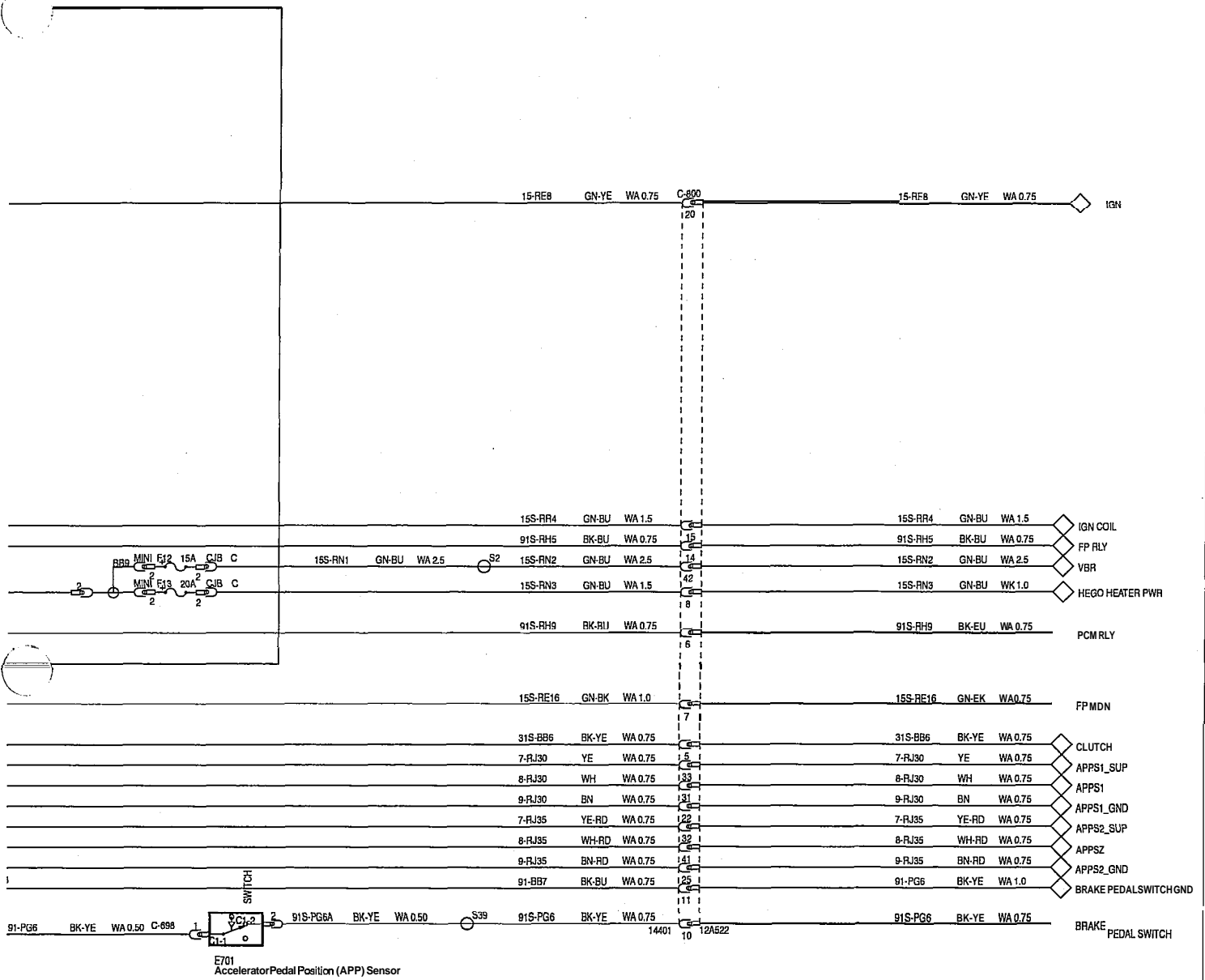


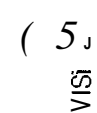


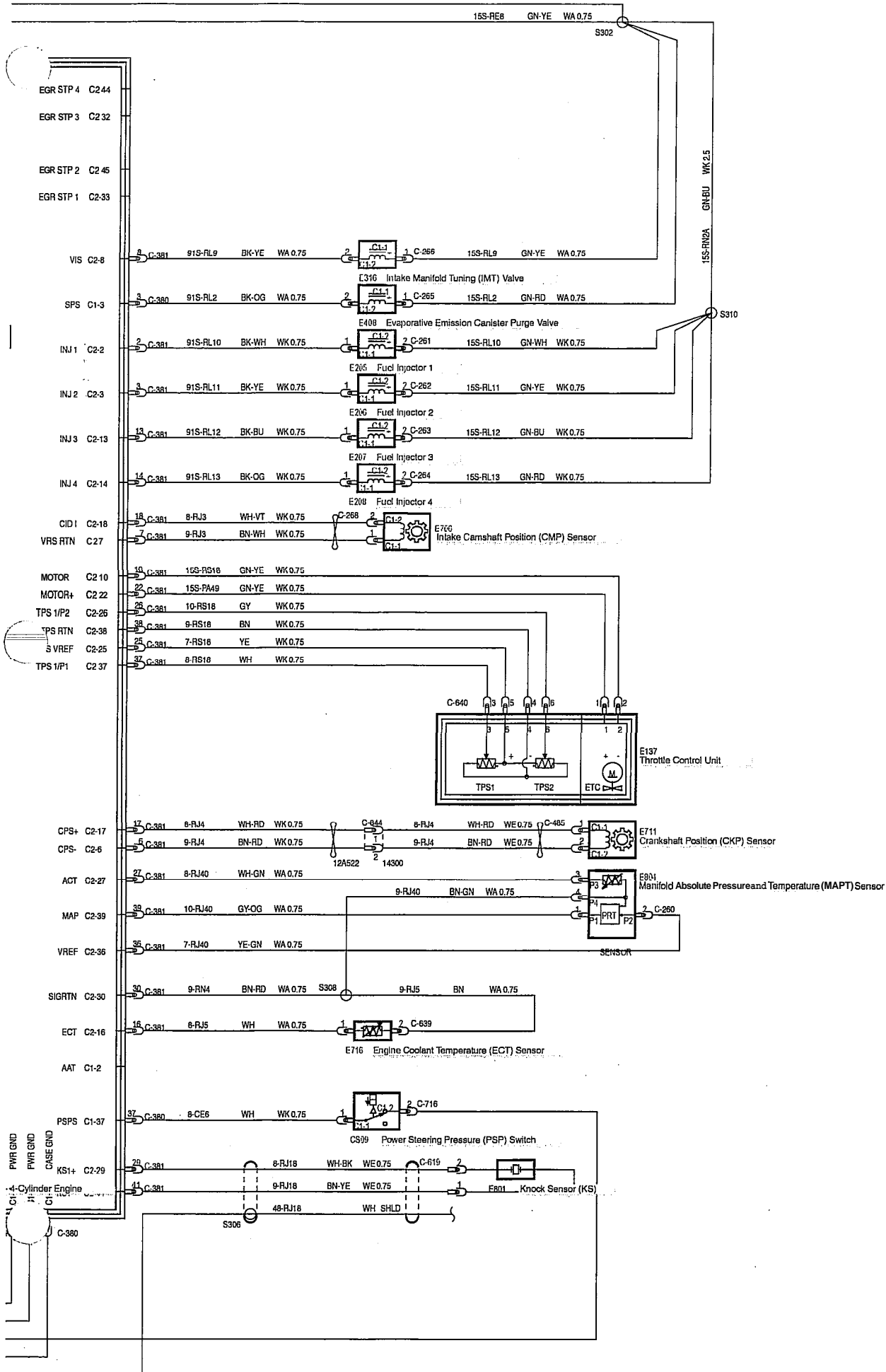


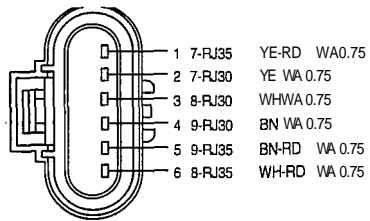
ntrol Module (PCM) - 4-Cylinder Engine









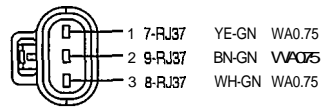


XW4T-14A464-BRA

C-649

TO ACCL. PEDAL DEMAND SENSOR

HARNESS 14401



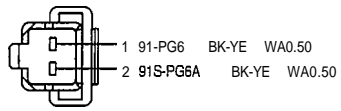
2S6T-14A464-DSA

C-240

TO BOOST PRESSURE SENSOR (DV6)

HARNESS 14K011



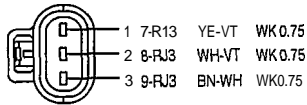


F5VB-14489-EA

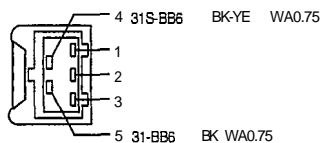
C-698

TO BRAKE PEDAL SWITCH

HARNESS14401



2S6T-14A464-DSA
G745
TO CAMSHAFT POSITION SENSOR (DIESEL III EOB / IV EOB)
HARNES14K011



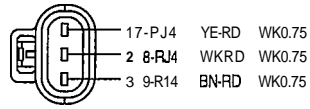
98AG-14489-HEA

C-307

TO CLUTCH PEDAL SWITCH

HARNESS 14401

PIN 1 => 7-RJ4 YE-RD 0.75 WA



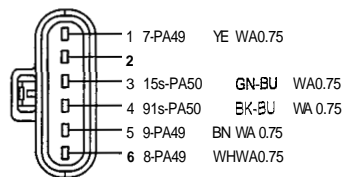
1M5T-14A464-FAB

C-476

TO CRANKSHAFT POSITION SENSOR (DIESEL)

HARNESS 14K011





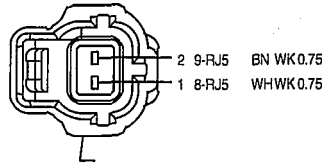
3M5T-14A464-FGA

C274

TO EGR THROTTLE POSITION SENSOR (DV6)

HARNESS 14K011

PIN1=>8-RJ5 WH0.75 WA
PIN2=>9-RJ5 BN 0.75 VA

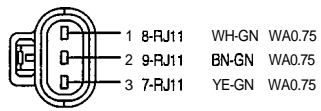


F5AB-14A464-BB

C-639

TO ENGINE COOLANTTEMPERATURESENSOR

HARNESS 14K011 OR 9H589

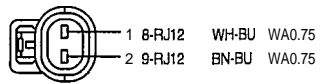


2S6T-14A464-DRA

C-241

TO FUEL RAIL PRESSURE SENSOR (DV6)

HARNESS 14K011

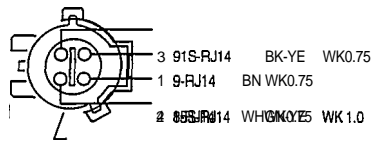


2S6T-14A464-DMA

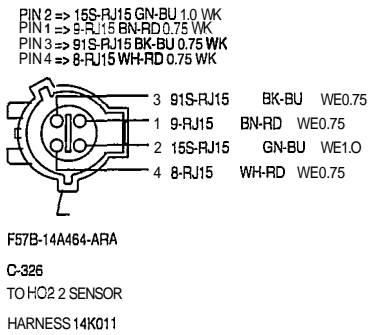
C-627

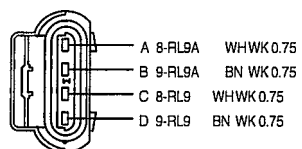
TO FUEL RAIL TEMP SENSOR

HARNESS 14K011



F57B-14A464-BJA
 C-325
 TO HO2 1 SENSOR (1.3)
 HARNESS14K011



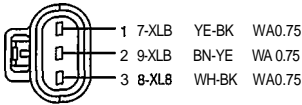


YS6T-14A464-ADA

C-478

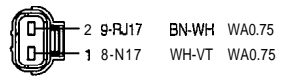
TO IDLE SPEED VALVE SOLENOID (STEPPER MOTOR)

HARNESS 9H589



2S6T-14A464-DSA
C-451
TO INTAKE AIR PRESSURE SENSOR (DIESELIVEOBD)
HARNES 14K011

PIN 1 => 8-RJ17A WH-VT 0.75 WA



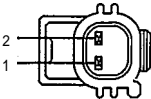
1M5T-14A464-FCA

C-456

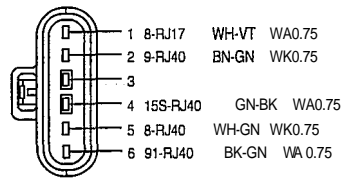
TO INTAKE AIR TEMP SENSEOR (DIESEL IV EOBD / DV6)

HARNESS 14K011

9-RJ18 BN-YE WE0.75
8-RJ18 WH-BK WE0.75



97BG-14A624-YBB
C-618
TO KNOCK 1 SENSOR
HARNESS 14K011

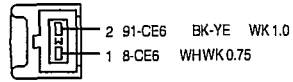


256T-14A464-DTA

C-654

TO MASS AIR FLOW SENSOR (DIESEL III EOB)

HARNESS 14K011



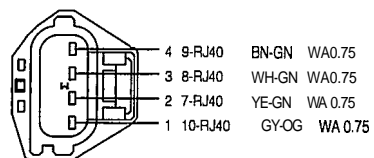
97AG-14A464-HBA

C-716

TO POWER STEERING PRESSURE SWITCH

HARNES 14K011 OR 12A522



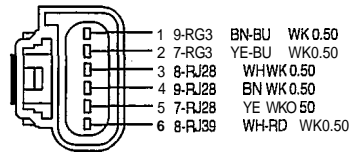


4M5T-14A464-YDA

C-260

TO TEMP MANIFOLD ABSOLUTE PRESSURE SENSOR (ST150)

HARNESS 12A522

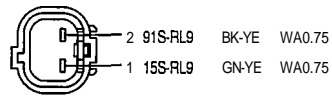


3L2T-14A464-BA(XXX)

C-638

TO THROTTLE CONTROL UNIT (SIGMA)

HARNESS 9H589

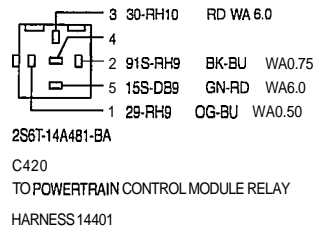


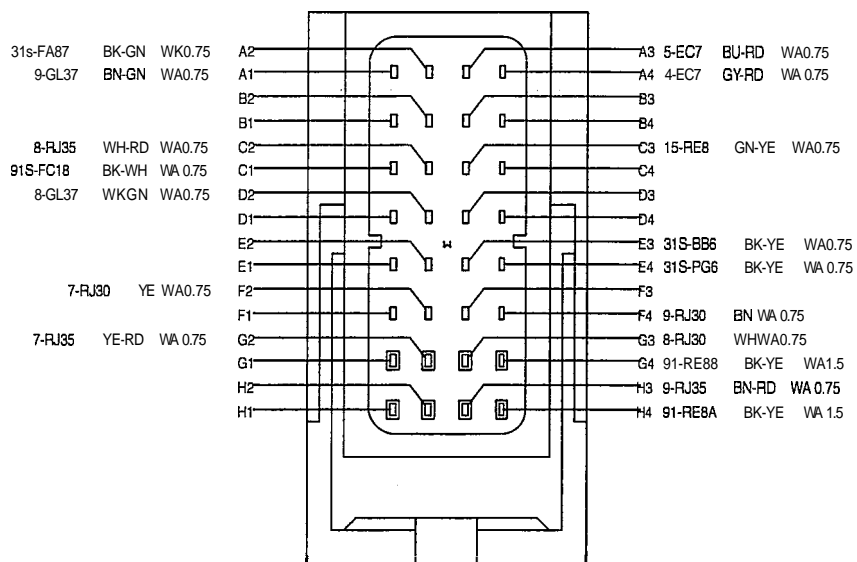
XF2T-14A464-YC

C-266

TO VARIABLE INTAKE SYSTEM VALVE SOLONOID (ST150)

HARNESS 12A522



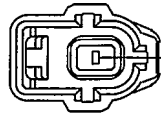


1M5T-14A464-ALB

C-370

TO PCM (CONN:A) (DIESELIII EOBD)

HARNESS 14K011



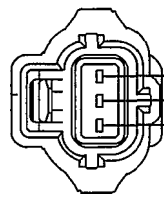
1 31S-GC20 BK-OG WK0.75

F65B-14A464-CA

C-735

TO OIL PRESSURE SWITCH(1.3/ST150)

HARNESS 14K011 OR 12A522



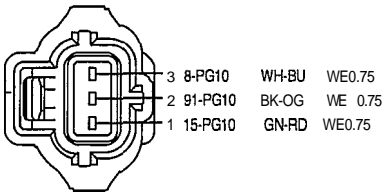
3	15S-RJ29	GN-RD	WE1.0
2	8-RJ29	WH-BU	WE0.75
1	91-RJ29	BK-OG	WE0.75

F6DB-14A464-AGA(XXX)

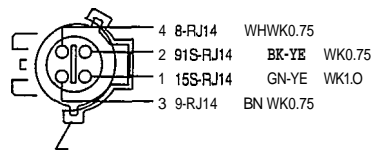
C-360

TO VEHICLE SPEED SENSOR

HARNESS 14401



F6DB-14A464-AGA(XXX)
C-432
VEHICLESPEED SENSOR 2
HARNESS14K011

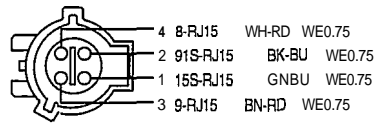


1F1T-14A464-JA(XXX)

C-244

TO HO2 1 SENSOR (ST150)

HARNESS 12A522

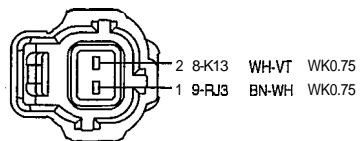


1F1T-14A464-FA(XXX)

C-243

TO HO2 2 SENSOR (ST150)

HARNESS 9K499

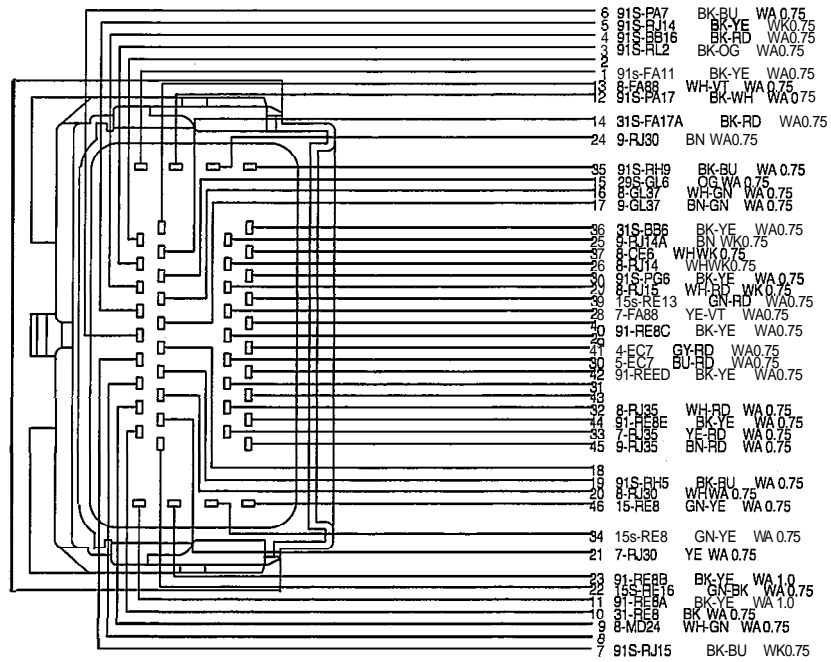


F7RB-14A464-AA

C-268

TO CAMSHAFT POSITIONSENSOR (ST150)

HARNESS12A522

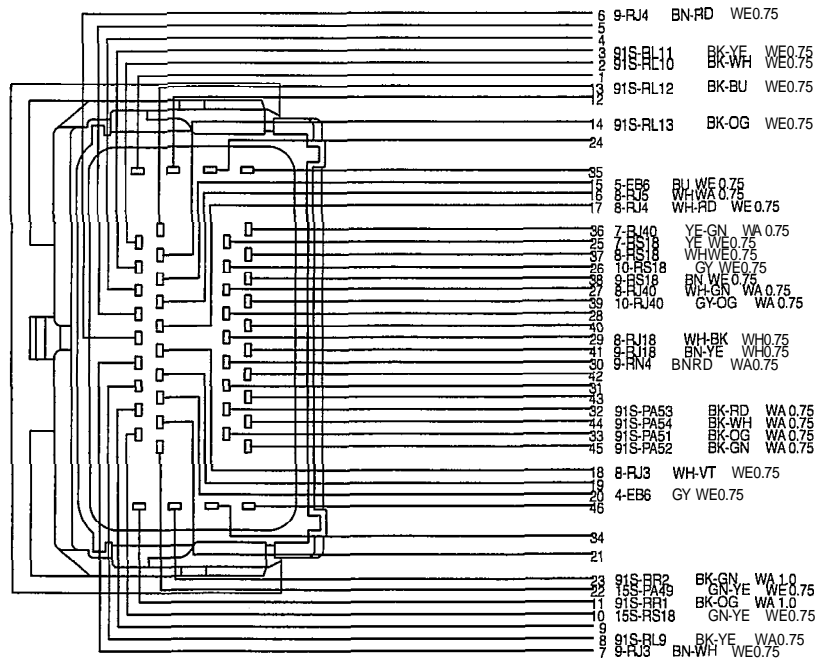


2L1T-14A464-SD(XXX)

C-380

TO PCM (CONN:A)(ST150)

HARNESS 12A522

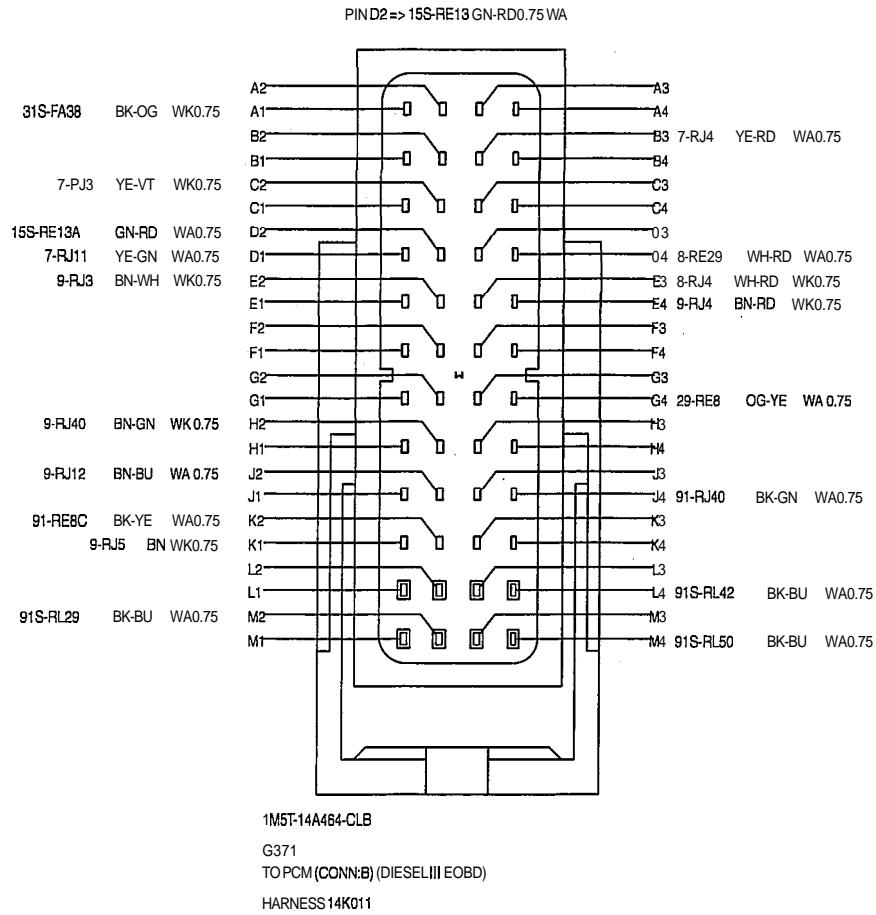


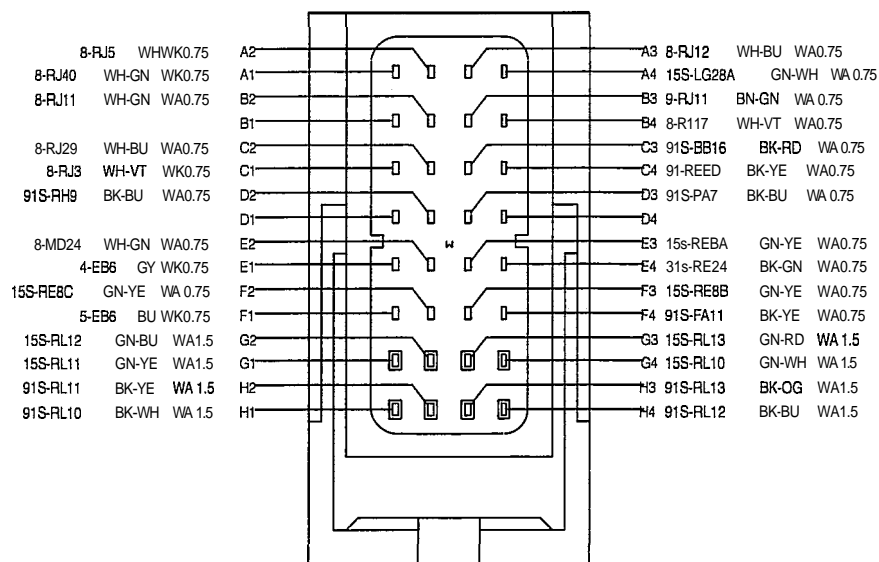
2L1T-14A464-TD(XXX)

C-381

TO PCM (CONN B) (ST150)

HARNESS 12A522



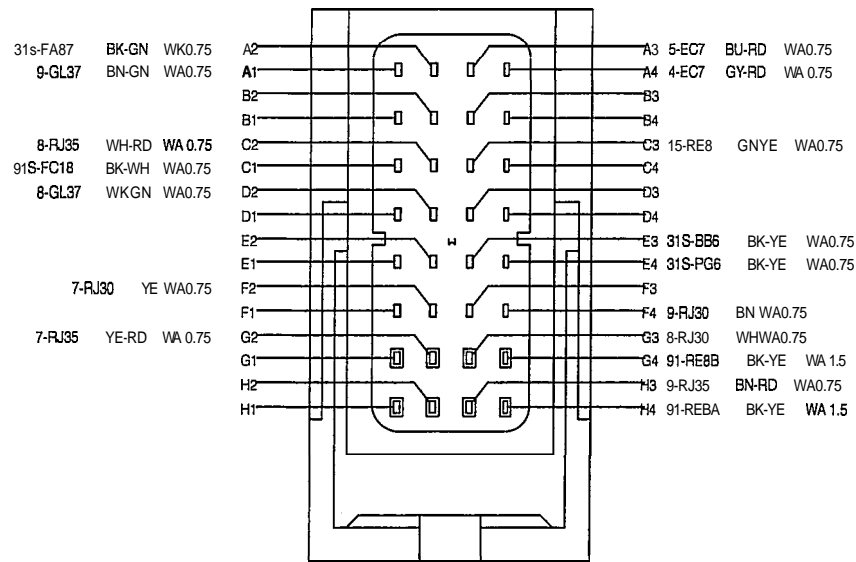


1M5T-14A464-BLB

G372

TO PCM (CONN:C) (DIESELIII EOBD)

HARNESS 14K011

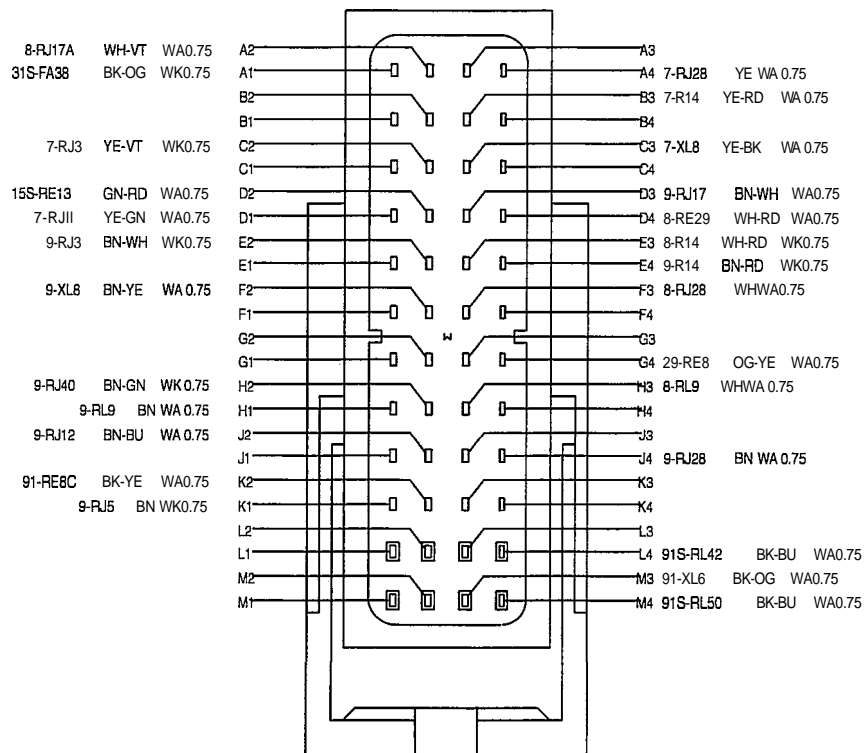


1M5T-14A464-ALB

G375

TO PCM (CONN:A) (DIESEL IV EOBD)

HARNESS 14K011

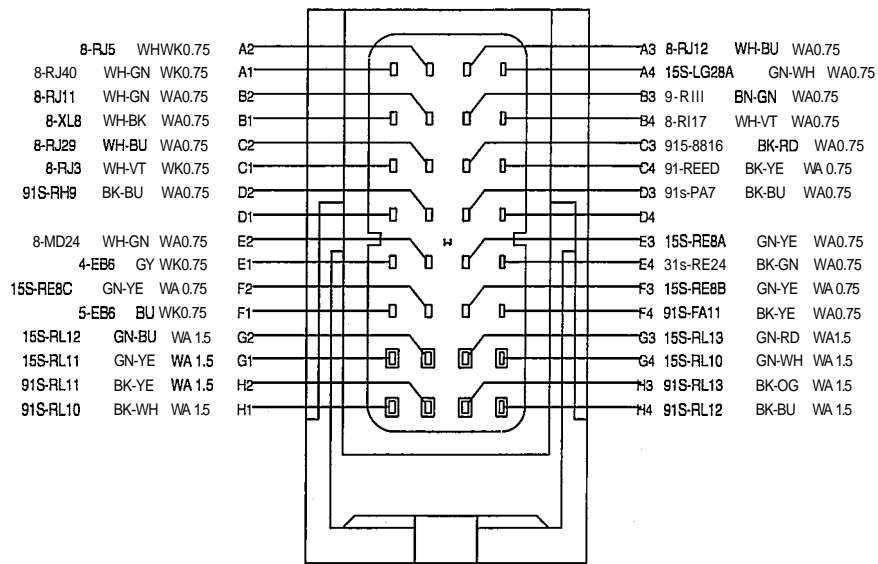


1M5T-14A464-CLB

C-376

TO PCM (CONN:B) (DIESEL/V EOB)

HARNESS 14K011

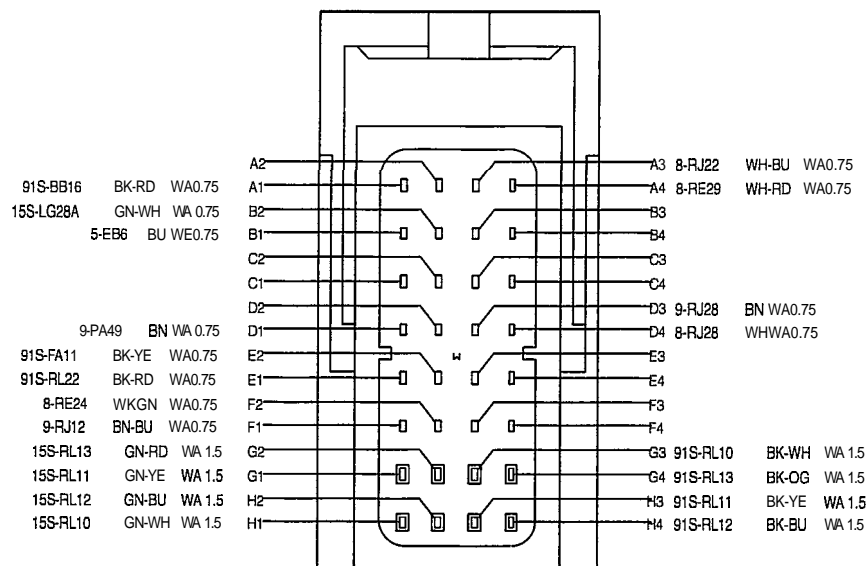


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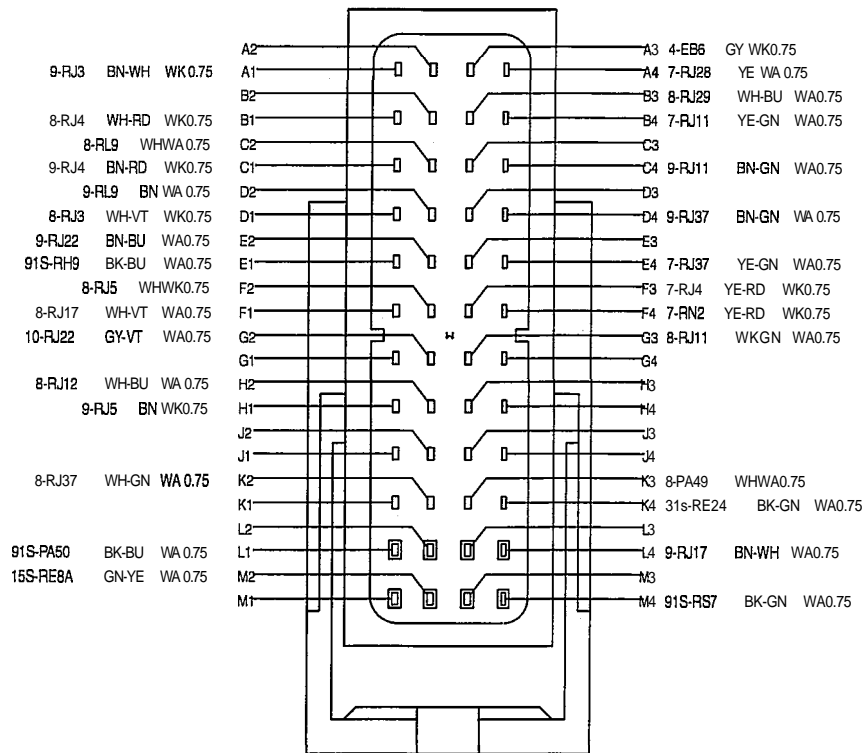
c-377

TO PCM (CONN:C) (DIESEL I/V EOBD)

HARNESS 14K011



1MST-14A464-BRA
C-382
TO PCM (CONN:CME) (DV6)
HARNESS 14K011

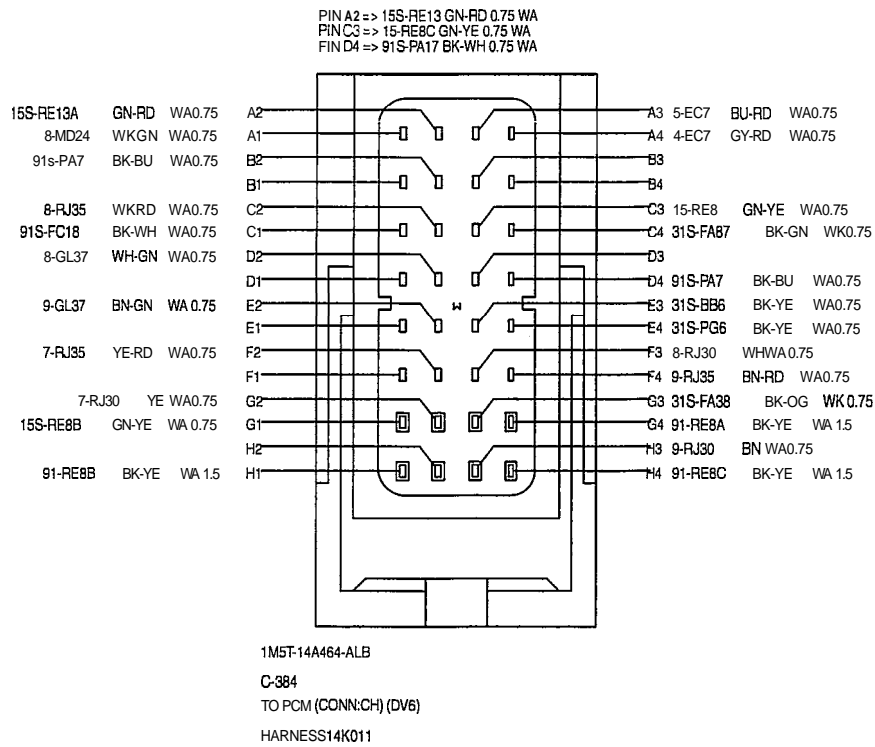


1M5T-14A464-CLB

C-383

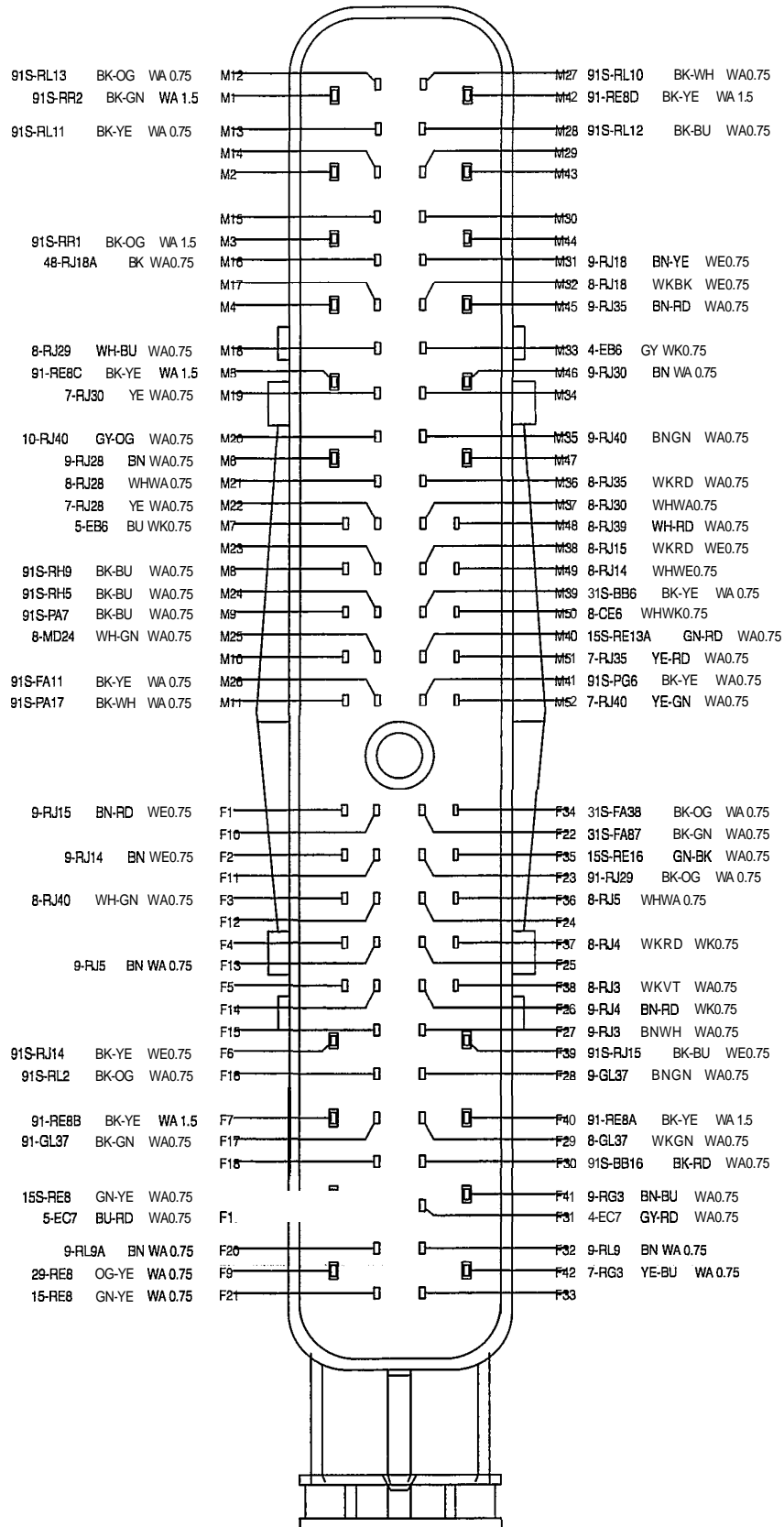
TO PCM (CONN:CM1) (DV6)

HARNESS 14K011





PIN M40 => 15S-RE13GN-RD 0.75 WA
 PIN F13 => 9-RJ5 BN 0.75 WK
 PIN F36 => 8-RJ5 WH 0.75 WK
 PIN F42 => 8-RL9A WH 0.75 WA
 PIN F41 => 8-RL9 WH 0.75 WA
 PIN F6 => 91S-RJ14 BK-YE 0.75 WK
 PIN F2 => 9-RJ14 BN 0.75 WK
 PIN M49 => 8-RJ14 WH 0.75 WK
 PIN F39 => 91S-RJ15 BK-BU 0.75 WK
 PIN F1 => 9-RJ15 BN-RD 0.75 WK
 PIN M38 => 8-RJ15 WH-RD 0.75 WK

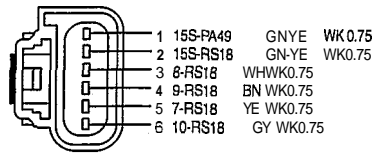


2S6T-14A464-PCB(XXX)

C-343

TO PCM (SOHC) (SIGMA)

HARNESS 14K011

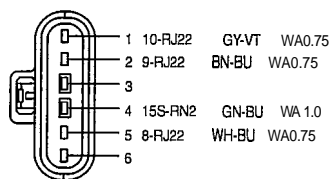


3L2T-14A464-BA(XXX)

C-640

TO THROTTLE COMROL UNIT (ST 150)

HARNESS 12A522




3M5T-14A464-DGA

C-653


TO MASS AIR FLOW SENSOR (DV6)

HARNESS 14K011

 1 31S-GC20 BK-OG WE0.75

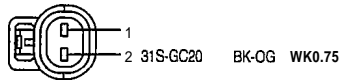
92BG-14474-ZGA

C-736

TO  PRESSURE SWITCH (1,411.6)

HARNESS14K011





2S6T-14A464-DLA

C737

TO OIL PRESSURE SWITCH(DIESEL)

HARNESS14K011



2	9-RJ5	BN WK 0.75
1	8-RJ5	WHWK 0.75

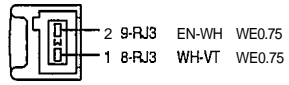
1M5T-14A464-FCA

C-738

TO ENGINE COOLANT TEMPERATURE SENSOR (DIESEL)

HARNESS 14K011

PIN 2 => 9-RJ3 EN-WH WE0.75 WA
PIN 1 => 8-RJ3 WH-VT0.75 WA

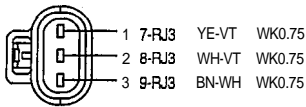


98AG-14A464-MBA

G746

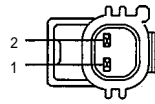
TO CAMSHAFT POSITION SENSOR (PETROL)

HARNESS 14K011 OR 9H589 OR 12A522



3M5T-14A464-ECA
C-747
TO CAMSHAFT POSITION SENSOR (DV6)
HARNESS 14K011

8-RJ18 WH-EK WE0.75
9-RJ18 EN-YE WE0.75

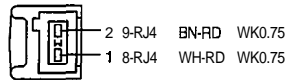


98AG-14A624-ABB

G619

TO KNOCK 1 SENSOR (ST1SQ)

HARNESS12A522

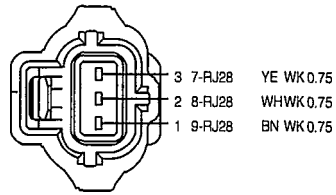


9BAG-14A464-MBA

C-477

TO CRANKSHAFT POSITION SENSOR (PETROL)

HARNESS 14K011

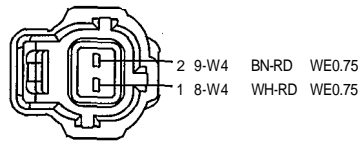


F6DB-14A464-AGA(XXX)

C-484

TO THROTTLE POSITION TPS SENSOR

HARNESS 9H589

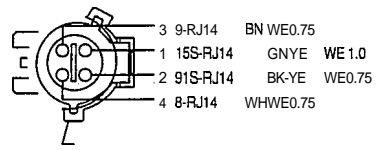


F7RB-14A464-AA

C-485

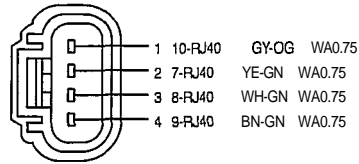
TO CRANKSHAFT POSITION SENSOR (ST150)

HARNESS14300



F4SB-14A464-AJC
C-365
TO HQ21 SENSOR (1.6)
HARNESS14K011

PIN 1 => 10-RJ40 GY-OG 0.75 WK
PIN 3 => 8-RJ40 WH-GN 0.75 WK
PIN 4 => 9-RJ40 BN-GN 0.75 WK
PIN 2 => 7-RJ40 YE-GN 0.75 WK

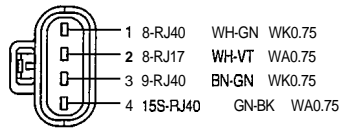


YF1T-14A464-CA

C-356

TO TEMP MANIFOLD ABSOLUTE PRESSURE SENSOR

HARNESS 9H589 OR 14K011



3M5T-14A464-FDB

C-453

TO MASS AIR FLOW SENSOR (DIESEL IV EOB)

HARNESS14K011



SECTION 307-01A Automatic Transmission/Transaxle — Vehicles With: 4-Speed Automatic Transmission (AW81-40)

VEHICLE APPLICATION: 2006.0 Fiesta

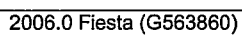
CONTENTS

PAGE

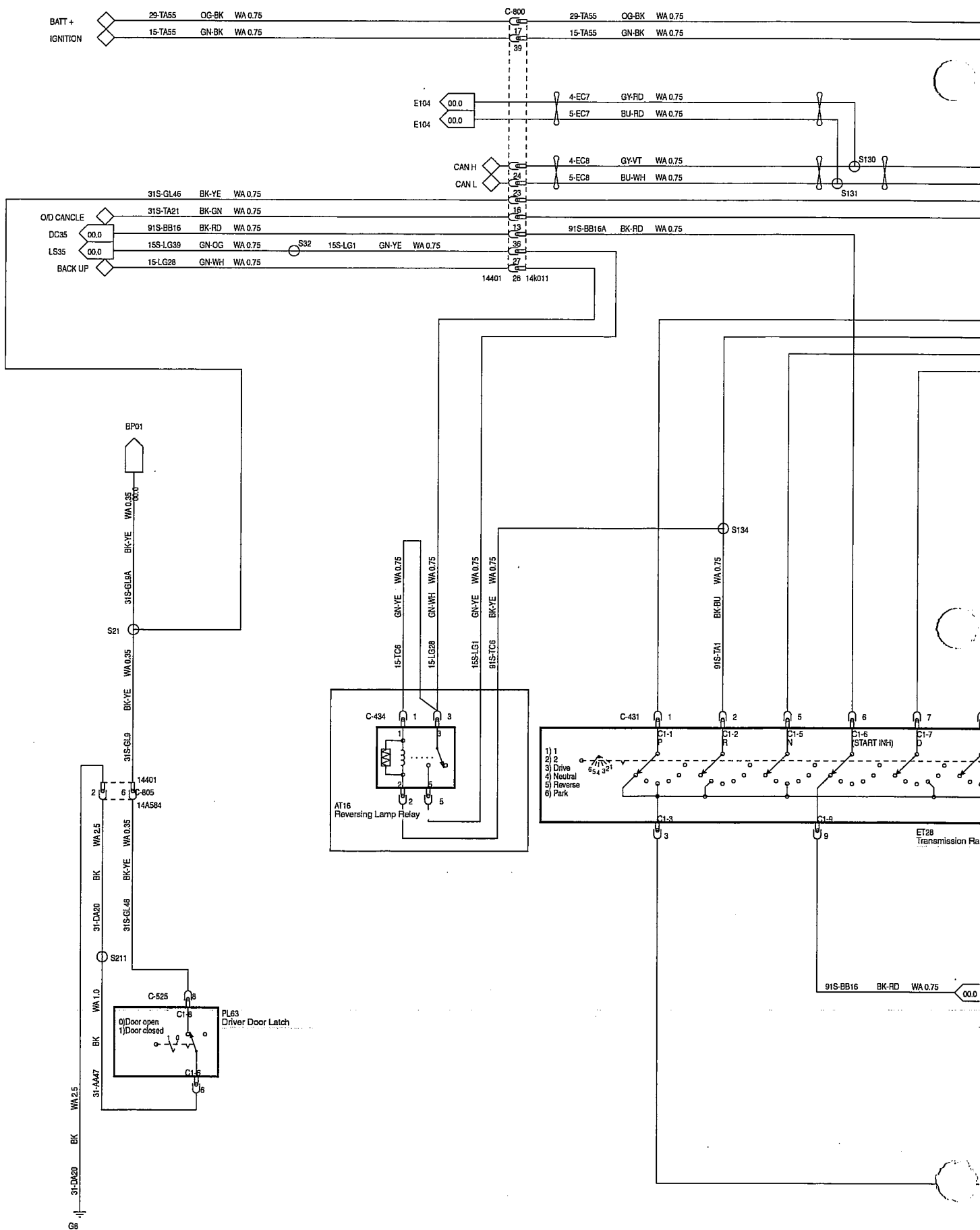
SCHEMATICS

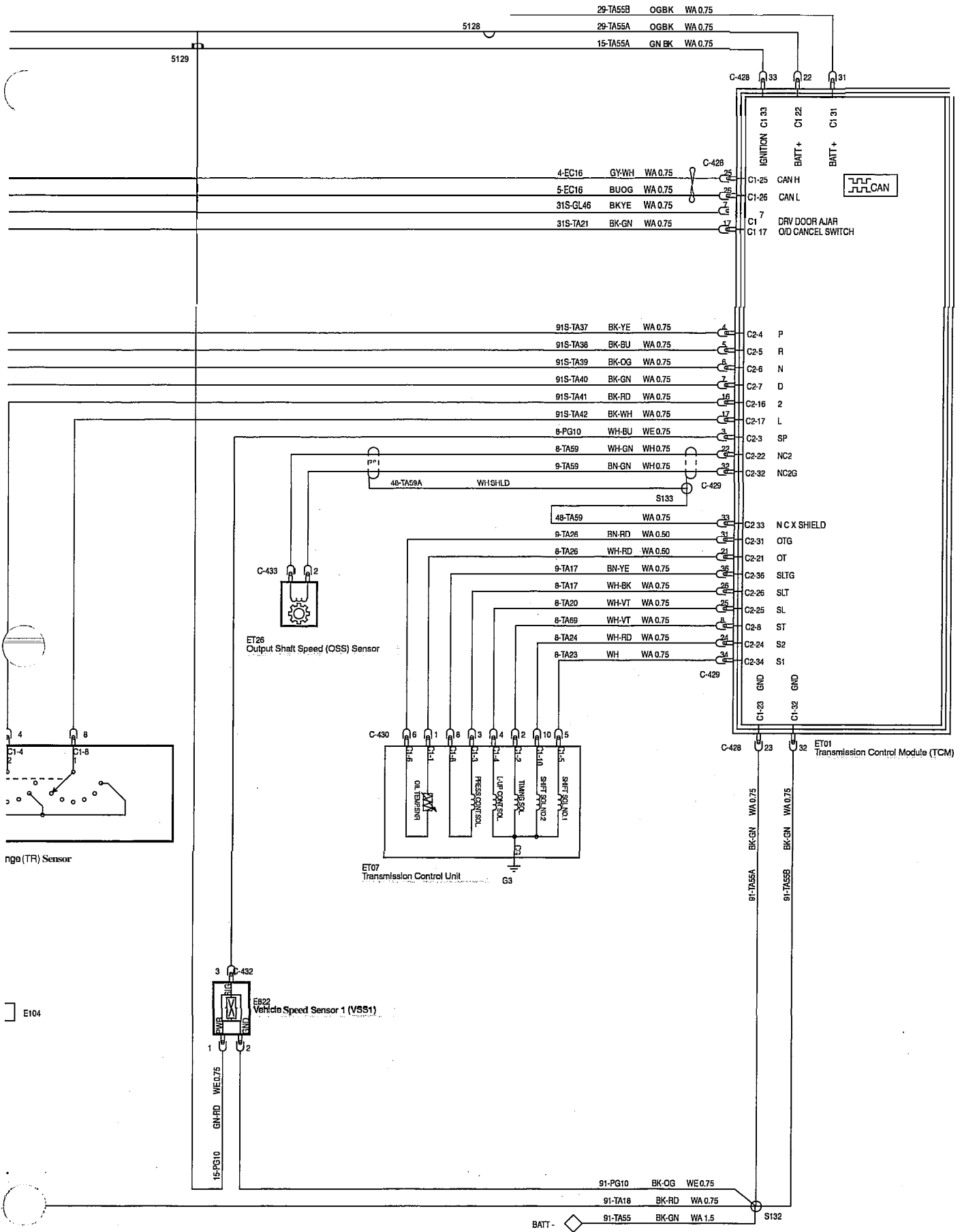
Automatic Transmission/Transaxle — LHD.....	307-01A-4
Automatic Transmission/Transaxle — RHD.....	307-01A-8

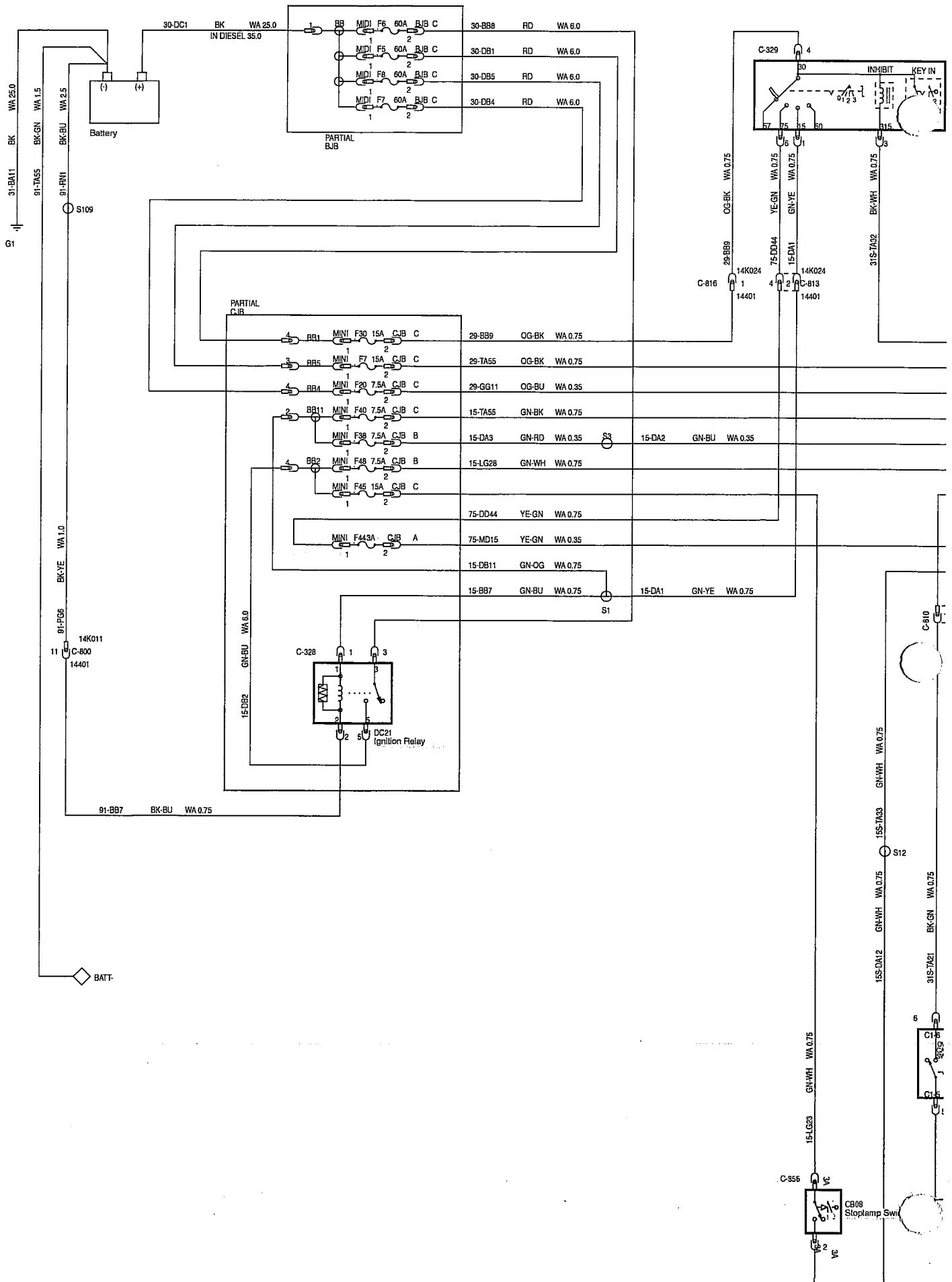


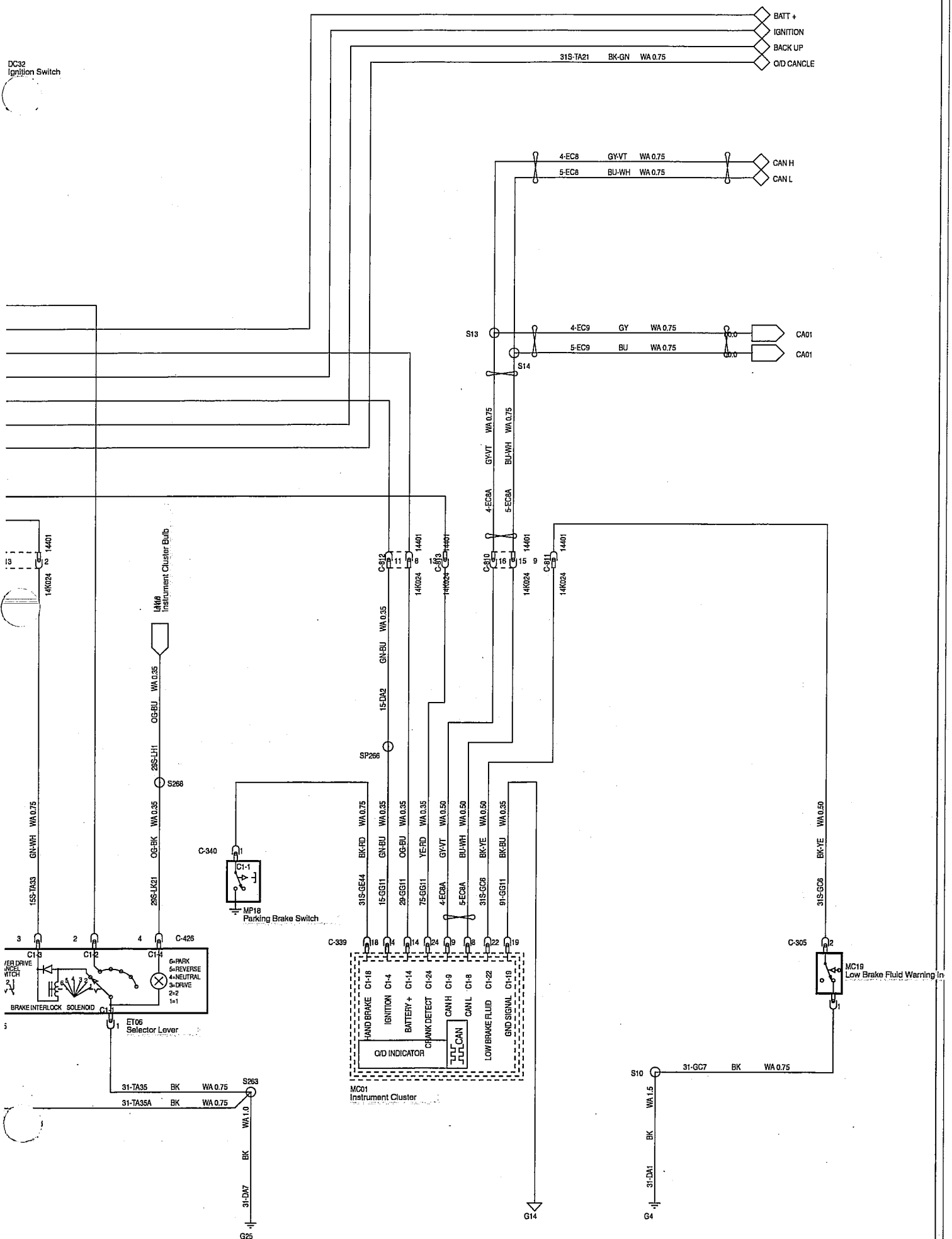




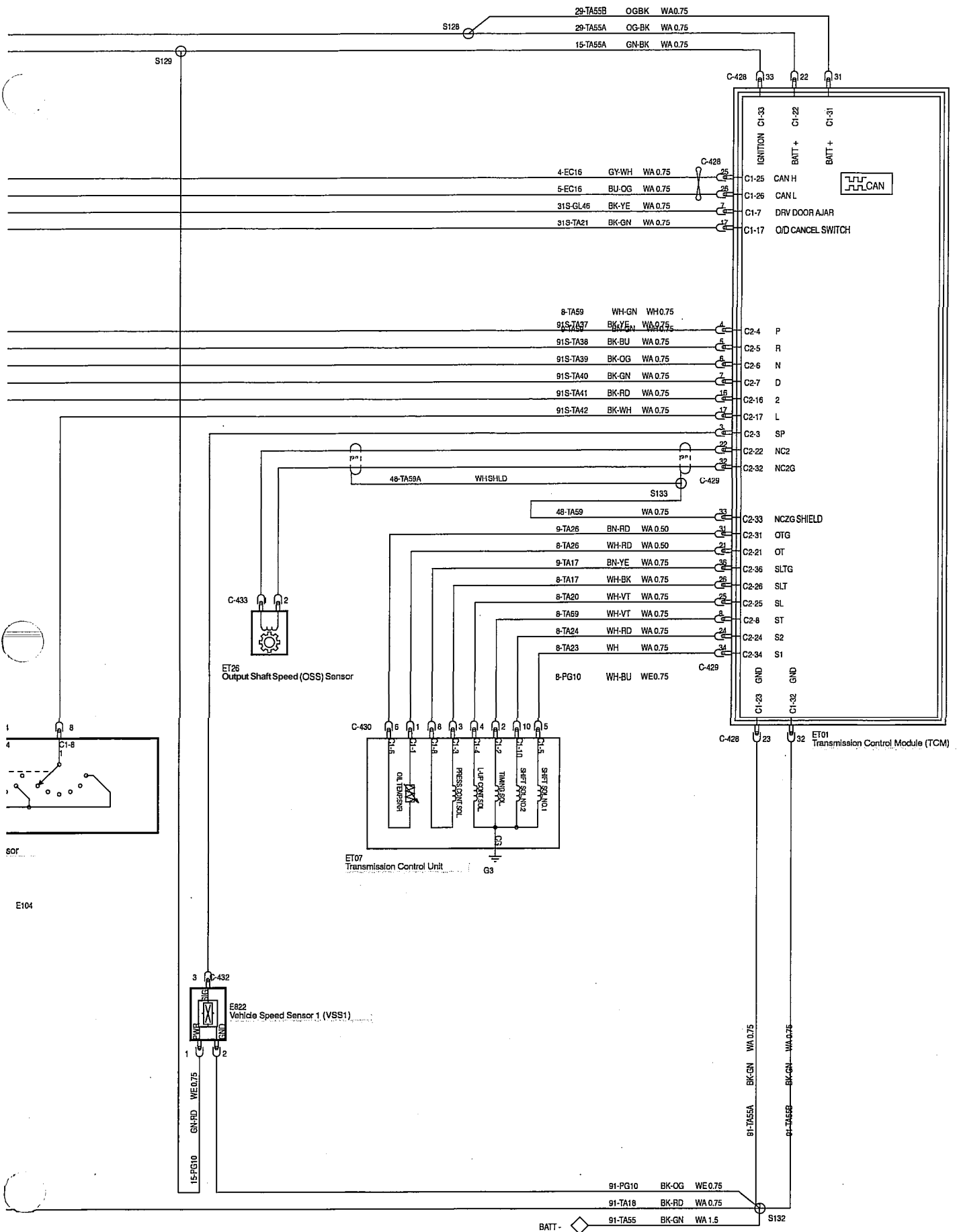














SECTION 307-01B Automatic Transmission/Transaxle — Vehicles With: 4-Speed Automatic Transmission (AW81-40)

VEHICLE APPLICATION: 2006.0 Fiesta

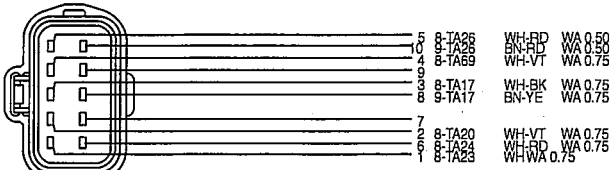
CONTENTS

PAGE

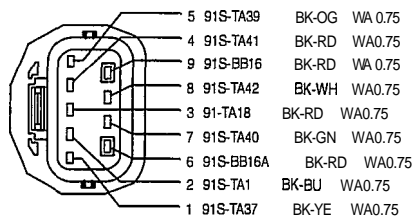
CONNECTORS

Transmission Control Module (TCM).....	307-01B-2
Transmission Control Module (TCM).....	307-01B-3
Transmission Range (TR) Sensor.....	307-01B-4

307-01B-2 Transmission Control Module (TCM)
Information not available at this time



5M6T-14A464-DA
C-430
TO TRANSMISSION HARDWARE UNIT
HARNESS 14K011



4S6T-14A464-CA

C-431

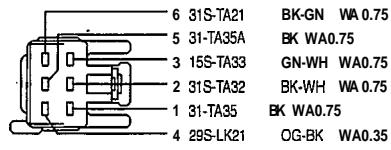
TO TRANSMISSION RANGE SENSOR

HARNESS 14K011

**SECTION 307-05 Automatic Transmission/Transaxle
External Controls — Vehicles With: 4-Speed Automatic
Transmission (AW81-40)**

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Selector Lever.....	307-05-2
Transmission Shift Motor.....	307-05-3
Transmission Select Motor.....	307-05-4
Transmission Control Switch (TCS).....	307-05-5
Selector Lever.....	307-05-6

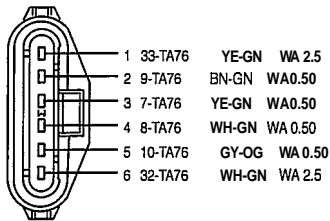


97BG-14489-YFB

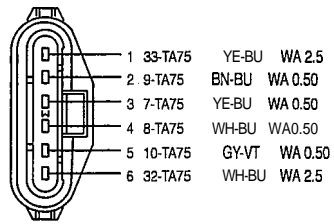
C-426

TO TRANSMISSION LEVER UNIT

HARNESS 14K024



2S6T-14A464-JB
G677
TO TRANSMISSIONSHIFT MOTOR
HARNESS 14K011



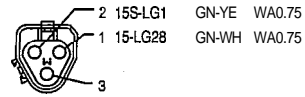
2S6T-14A464-KB

C-678

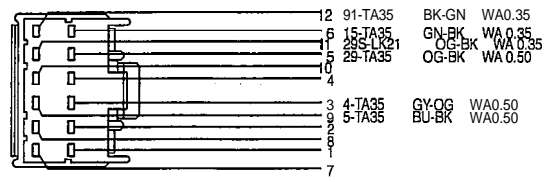
TO TRANSMISSION SELECT MOTOR

HARNESS14K011

PIN 2 => 15S-LG5 GN-RD 0.75 WA



91AG-14A464-BCC
G425
TO TRANSMISSIONSWITCH
HARNESS14K011 OR 12A522



F50B-14489-GA

C-679

TO TRANSMISSION LEVER UNIT

HARNESS14K024

SECTION 308-11 Manual Transmission/Transaxle Automated Gearshift System

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS





PAGE

SCHEMATICS

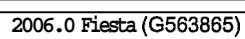
Manual Transmission/Transaxle - Automated Gearshift System — LHD.....	308-11-4
Manual Transmission/Transaxle - Automated Gearshift System — RHD.....	308-11-8

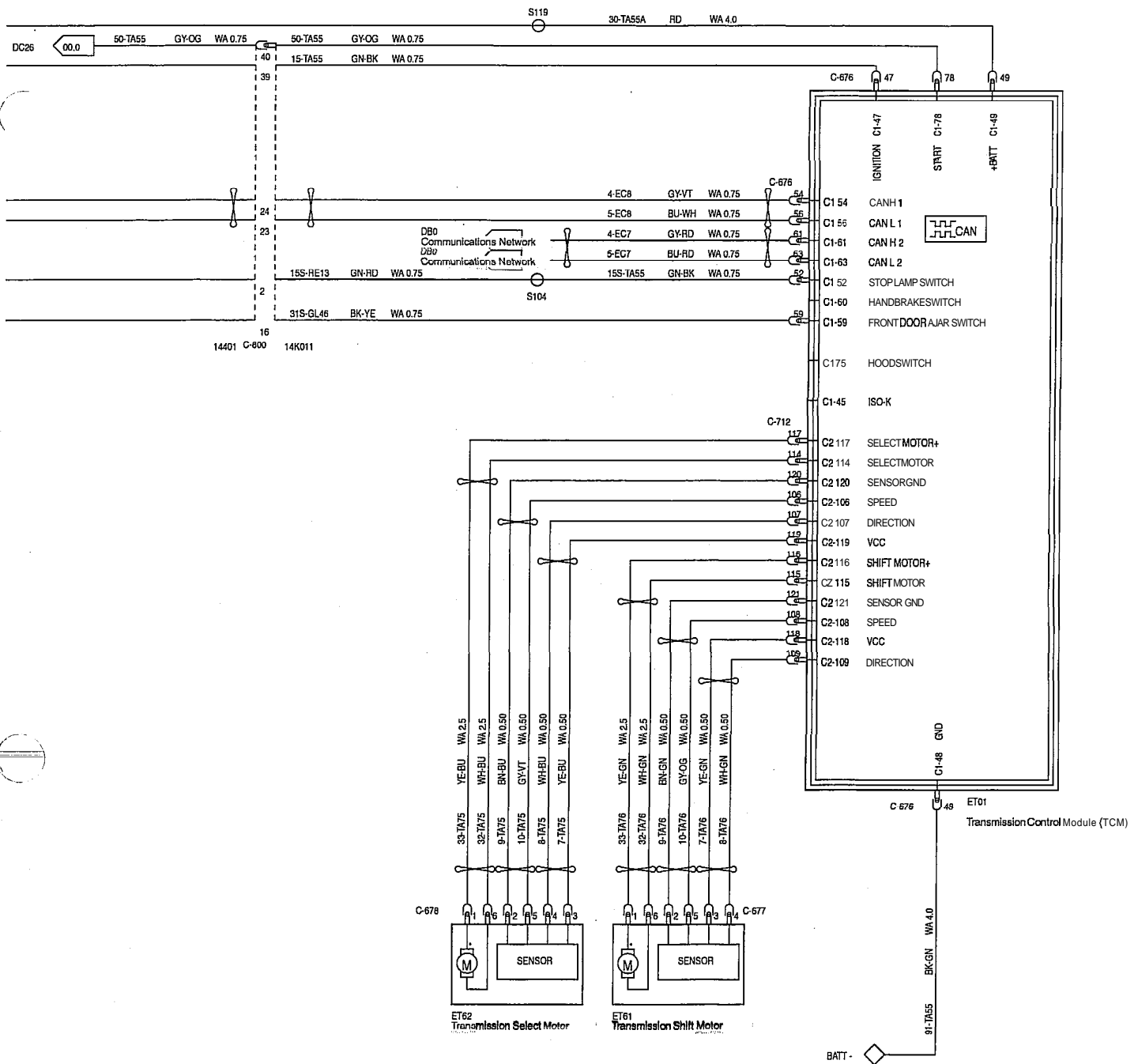


START 15-TA55 GN-BK WA0.75

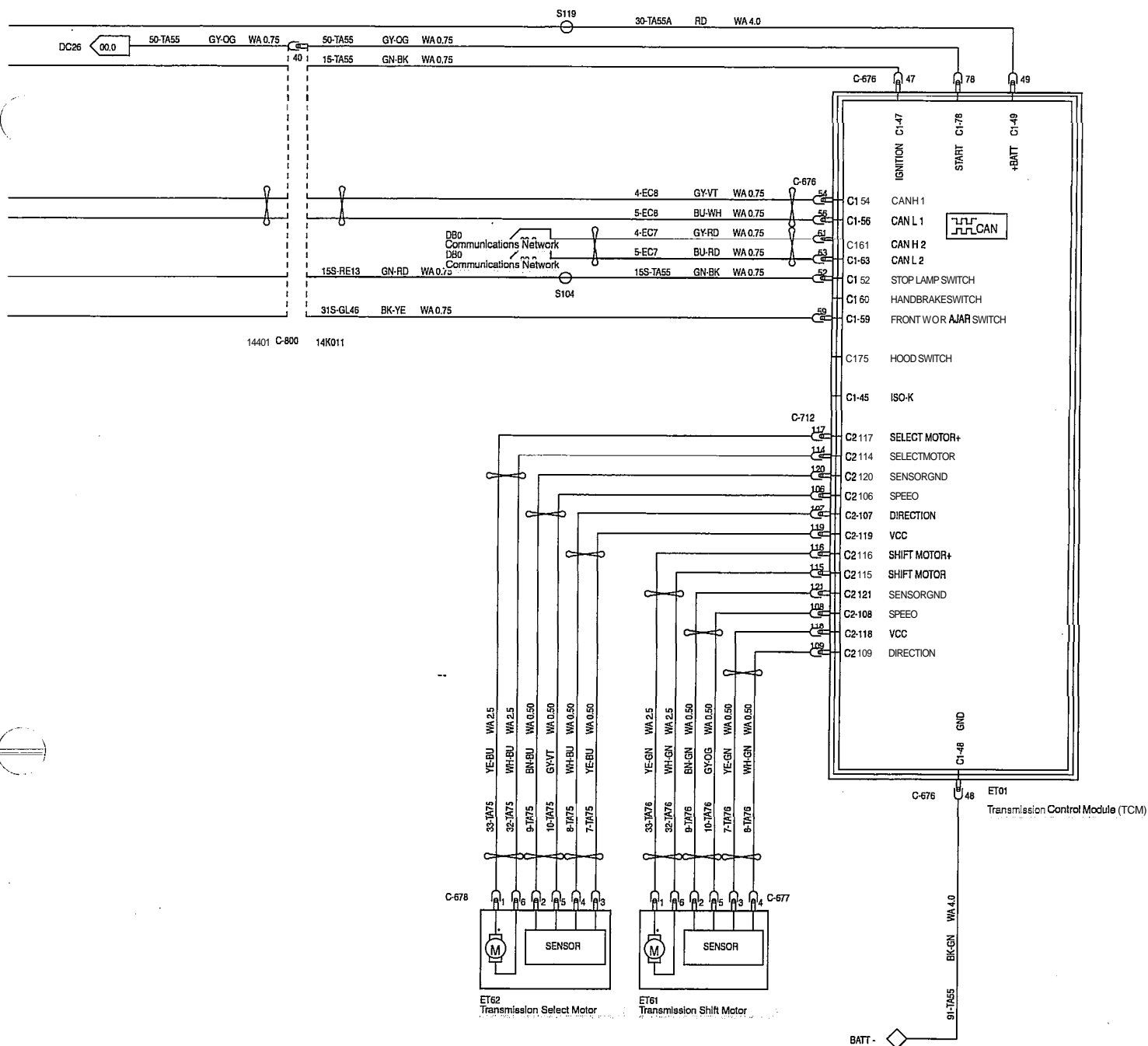
CANH			4-EC8	GY-VT	WA0.75
CANL			CECB	BU-WH	WA0.75

STOPLAMP 15S-RE13 GNRD WA.075









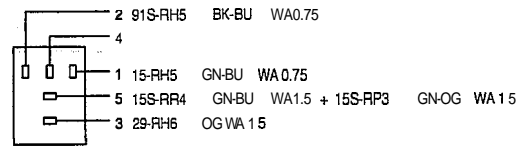


SECTION 310-01 Fuel Tank and Lines

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Fuel Pump Relay.....	310-01-2
Fuel Pump and Sender Unit.....	310-01-3
Inertia Fuel Shutoff (IFS) Switch.....	310-01-4

PIN5=> 15S-RP3 GN-OG 1.5 WA + 15S-RR4 GN-BU 1.5 WA

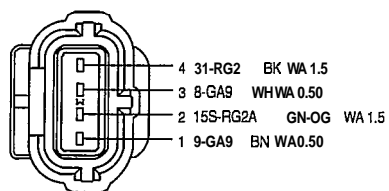


2S6T-14A481-AA

C-410

TO FUEL PUMP RELAY

HARNESS 14401

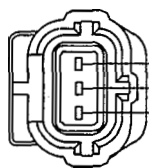


2S6T-14A464-TAA

C-315

TO FUEL TANK UNIT

HARNESS 14401



1 15S-RG2 GN-OG WAI.5

2

3 15S-RP3 GN-OG WA 1.5

YC3T-14A464-DA

C-331

TO INERTIA FUEL SHUT OFF SWITCH

HARNESS 14401

SECTION 412-00 Climate Control System - General Information

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

SPECIFICATIONS

Specifications.....	412-00-2
---------------------	----------

DIAGNOSIS AND TESTING

Climate Control System.....	412-00-4
Inspection and Checking.....	412-00-4
Refrigerant Circuit - Quick Check.....	412-00-4
Fault Memory Interrogation without WDS - vehicles with electronic automatic temperature control (EATC).....	412-00-5
Fault Code Table.....	412-00-6
Symptom Chart.....	412-00-7
System Checks.....	412-00-9
Component Tests.....	412-00-85

GENERAL PROCEDURES

Air Conditioning (NC) Clutch Air Gap Adjustment.....	(34 628 6)	412-00-86
Air Conditioning (NC) System Recovery. Evacuation and Charging.....	(34 620 2)	412-00-87
Refrigerant Oil Adding.....	(34 621 1)	412-00-90
Air Distribution System Cleaning.....		412-00-91
Contaminated Refrigerant Handling.....	(34 620 9)	412-00-93
Spring Lock Coupling.....		412-00-94
Electronic Leak Detection.....	(34 620 7)	412-00-96
Fluorescent Dye Leak Detection.....		412-00-97
Vacuum Leak Detection.....	(34 620 3)	412-00-98

SPECIFICATIONS

Lubricants, sealants and adhesives

Material	Specification
Refrigerant R134a	WSH-M17B19-A
Refrigerant oil	WSH-M1C231-B

Refrigerant fill quantities

	Grams
Air conditioning (vehicles with condenser coils of 3.0 mm diameter)	650 ± 13
Air conditioning (vehicles with condenser coils of 1.2 mm diameter)	470 ± 13
Air conditioning (vehicles with 1.6L Duratorq-TDCi (DV6) diesel engine)	520 ± 13

Refrigerant oil fill quantities

	millilitres
Air conditioning	207
Air conditioning (vehicles with 1.6L Duratorq-TDCi (DV) diesel engine)	200

Addition of refrigerant oil when new components are installed

	millilitres
Air conditioning compressor (if the amount of refrigerant oil taken from the compressor is less than 90 ml)	add 90
Air conditioning compressor (vehicles with 1.6L Duratorq-TDCi (DV) diesel engine) (if the amount of refrigerant oil taken from the compressor is less than 50 ml)	add 50.
Air conditioning compressor (if the amount of refrigerant oil taken from the compressor is between 90 ml and 150 ml))	Add same quantity + 30.
Air conditioning compressor (vehicles with 1.6L Duratorq-TDCi (DV) diesel engine) (if the amount of refrigerant oil taken from the compressor is between 50 ml and 150 ml))	Add same quantity + 30.
Air conditioning compressor (if the amount of refrigerant oil taken from the compressor is more than 150 ml)	Add the same quantity.
Air conditioning condenser	add 30.
Air conditioning evaporator	add 90.
Air conditioning evaporator (vehicles with 1.6L Duratorq-TDCi (DV) diesel engine)	add 50.
Renewal of all lines	Add same quantity +2.
Renewal of all lines and components	add 0.
Always, if refrigerant was drained.	Add the same quantity.
Accumulator/dehydrator	Add same quantity +90.
Accumulator/dehydrator (vehicles with 1.6L Duratorq-TDCi (DV) diesel engine)	Add same quantity +50.

Air conditioning clutch

	mm
Clutch gap, A/C compressor	0,35 - 0,75

SPECIFICATIONS**Tightening torques**

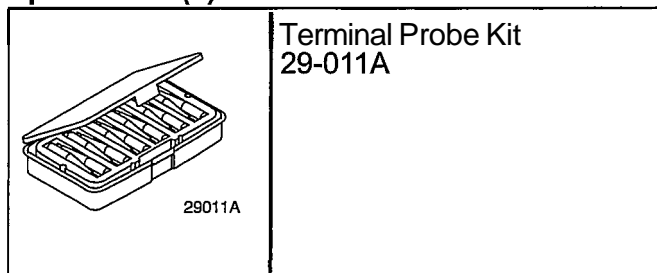
Description	Nm	lb/ft	lb/in
Bolt, A/C compressor drive plate	13	10	-

DIAGNOSIS AND TESTING

Climate Control System

Refer to Wiring Diagrams Section 412-02A, for schematic and connector information.

Special Tool(s)



Terminal Probe Kit
29-011A

General Equipment

Digital Multimeter (compatible with K-type thermocouple)
Worldwide Diagnostic System (WDS)
Refrigerant center
Thermometer - Fluke 80 PK-8 (FSE number 260 4102 001 07)

Inspection and Checking

1. VERIFY customer concern.
2. Visually CHECK for any obvious mechanical or electrical damage.

Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> • Coolant level • Refrigerant lines • Drive belt • Condenser • Refrigerant compressor 	<ul style="list-style-type: none"> • Fuses • Wiring harness • Connectors

3. RECTIFY any obvious causes for a concern found during the visual inspection before performing any further tests. CHECK the operation of the system.
4. If the concern persists after the visual inspection, PERFORM a fault diagnosis on the electronic engine management with WDS and RECTIFY any displayed faults in accordance with the displayed fault description. CHECK the operation of the system.
5. For vehicles with no stored fault(s), PROCEED in accordance with the symptom chart according to the fault symptom.

6. Following checking or elimination of the fault and after completion of operations, the fault memories of all vehicle modules must be READ OUT and any stored faults must be DELETED. READ OUT all fault memories again following a road test.

Refrigerant Circuit - Quick Check

▲ WARNING: The air conditioning system is filled with refrigerant R134a. Observe "Health and Safety Precautions". For further information

REFER to: Gesundheits- und Sicherheitsvorkehrungen (100-00, Description and Operation).

Refrigerant circuit check

▲ WARNING: Under certain circumstances, refrigerant lines and A/C components may be extremely hot or cold. Exercising care, touch the refrigerant lines or A/C components in order to check this. Failure to observe this instruction can lead to injury.

The refrigerant line from the refrigerant compressor to the condenser must be hot.

- The refrigerant line from the A/C condenser to the fixed orifice tube must be warm, but not so hot as the refrigerant line mentioned above.
- Determine the difference in temperature upstream and downstream of the A/C condenser by measuring the temperatures at the refrigerant lines. The temperature difference should be more than 20° C, depending on the ambient temperature. If the temperature difference is less, check the condenser for contamination or damage to the fins as well as operation of the radiator fan.
- The refrigerant line between the fixed orifice tube and the evaporator must be cold from the point where the fixed orifice tube is installed. Depending on the weather, the line may also be iced up on the outside.
- The refrigerant line between the evaporator and the A/C compressor including the accumulator must be cold.

DIAGNOSIS AND TESTING

Evaporator outlet temperature test

To test the power of the A/C system, the temperature of the evaporator outlet line must be measured. To do this, the following preconditions must be met:

- Open all windows.
- Set the air distribution to the defrost/dashboard position and open all the ventilation nozzles.
- Deactivate recirculated air function.
- Select lowest blower switch setting.
- Select lowest temperature setting.

NOTE: The temperature measurement cannot be done with a thermometer which makes no contact. Incorrect readings could be made because of reflections from surfaces.

Connect temperature sensor (Fluke 80 PK-8) to the refrigerant line from the evaporator to the accumulator in the area of the accumulator (metal line). Connect the temperature sensor to the multimeter.

Start the engine and allow it to run at idle speed for several minutes.

Switch on the air-conditioning system.

After three minutes, measure the surface temperature of the evaporator outlet line.

If the temperature measured is 2° C or lower (vehicles with automatic transmission: 5° C or lower) the A/C system is OK. If the temperature is higher, the A/C system may be under-filled.

Frequent faults and their causes

Should a customer express concern about poor cooling performance of the A/C system it must be ensured that the temperature control valve actuation is OK.

- No or poor cooling performance:
 - Blockage or narrowing in a refrigerant line or in the accumulator: The location of the blockage or narrowing can easily be found by comparing temperatures at the refrigerant lines and at the accumulator. The blockage or restriction is located at the point where the temperature difference is identified. **Note:** A temperature difference in the area of the fixed orifice tube is normal. Once the

location of the blockage or restriction has been detected, check the relevant component and renew if necessary.

- Cooling power suddenly deteriorates (returns to normal after the compressor has been switched off for about 5 minutes):
 - The cause is an iced-up fixed orifice tube because of moisture in the refrigerant circuit. In order to ensure that moisture is completely removed from the refrigerant circuit, evacuation time must be extended to 2-3 hours and the dehydrator must be renewed. For further information

REFER to: Klimaanlage entleeren, evakuieren und befüllen (412-00, General Procedures).

Fault Memory Interrogation without WDS - vehicles with electronic automatic temperature control (EATC)

The climate control system features a self-diagnosis function which can detect and store both current permanent faults as well as intermittent faults which have occurred during normal operation of the vehicle. It is also possible to read out these faults via the display of the EATC module. To start self-diagnosis or to read out the fault memory, the ignition key must be turned to the "ON" position and the battery voltage must be between 9 V and 16 V.

Activation of self-diagnosis

On the EATC module, briefly PRESS the "OFF" and "FOOTWELL" buttons simultaneously for at least 2 seconds, then PRESS "AUTO" within 1.5 seconds. The self-diagnosis which then starts lasts a few seconds. An animated display appears in the EATC display during this time. Any faults detected are displayed in the form of trouble codes. Example: first of all, "93" flashes for 2 seconds, then "42" flashes for 2 seconds - DTC 9342 = internal control unit fault. If no faults are stored, then all of the segments in the display are actuated. The following table gives information on the possible DTCs and their corresponding meanings. By PRESSING the "DEFROST" button, the fault memory is cleared and diagnosis mode is ended. To end the diagnostic mode without clearing the DTCs, PRESS any other EATC button.

DIAGNOSIS AND TESTING

Read out stored faults

On the EATC module, briefly PRESS the "OFF" and "FOOTWELL" buttons simultaneously for at least 2 seconds, then PRESS "HEADROOM" within 1.5 seconds. Any stored intermittent faults are output on the EATC display and should be written down for safety. By PRESSING the "DEFROST" button, the fault memory is cleared and diagnosis mode is ended. To end diagnosis mode without clearing the DTCs, PRESS any other button on the EATC module.

Reading out the EATC software version

On the EATC module, briefly PRESS the "OFF" and "FOOTWELL" buttons simultaneously for at least 2 seconds, then PRESS "A/C" within 1.5 seconds. The SW version is output on the EATC display. The output mode is ended by PRESSING any button.

Fault Code Table

Self-test code	Description	Action
B1200 19200	Internal control unit fault	CLEAR the fault memory. If the fault occurs again after a functional test, RENEW the EATC module.
B1242 19242	Fault in the circuit of the recirculated air flap actuator	GO to Pinpoint Test G.
B1251 19251	Break in circuit for interior temperature sensor	GO to Pinpoint Test M.
B1253 19253	Short in circuit for interior temperature sensor (short to ground)	GO to Pinpoint Test M.
B1261 19261	Short circuit in sun load sensor circuit (short to ground)	GO to Pinpoint Test L.
B1263 /9263	Circuit of actuator for air distribution flap faulty	GO to Pinpoint Test H.
B1342 19342	Internal control unit fault	CLEAR the fault memory. If the fault occurs again after a functional test, RENEW the EATC module.
B1676 19676	Power supply voltage outside tolerance	CHECK charging system. For further information REFER to: Charging System (414-00, Diagnosis and Testing). If the charging system is OK, GO to Pinpoint Test O.
B2266 /A266	Circuit of temperature control flap actuator faulty	GO to Pinpoint Test I.
B2297 /A299	Break in circuit for footwell air outlet temperature sensor	GO to Pinpoint Test J.
B2298 /A307	Short in circuit for footwell air outlet temperature sensor (short to ground)	GO to Pinpoint Test J.

DIAGNOSIS AND TESTING

Self-test code	Description	Action
A297	Break in circuit for center vents air outlet temperature sensor	GO to Pinpoint Test K.
A298	Short in circuit for center vents air outlet temperature sensor (short to ground)	GO to Pinpoint Test K.
B2308 /A308	Fault in the circuit of the interior temperature sensor blower	GO to Pinpoint Test N.
B2516 /A516	Circuit of blower control faulty	GO to Pinpoint Test B.
B2818 /A818	Circuit of A/C demand signal faulty (short circuit to voltage)	GO to Pinpoint Test P.

Symptom Chart**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Blower inoperative/incorrect function - vehicles without electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Fuse Circuit(s) Blower motor Blower switch Blower resistor assembly 	<ul style="list-style-type: none"> GO to Pinpoint Test A.
<ul style="list-style-type: none"> Blower inoperative/incorrect function - vehicles with electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Fuse Circuit(s) Blower motor Blower control module Electronic automatic temperature control (EATC) module 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
<ul style="list-style-type: none"> Blower operating continuously - vehicles without electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Circuit(s) Blower switch Blower resistor assembly 	<ul style="list-style-type: none"> GO to Pinpoint Test C.
<ul style="list-style-type: none"> Air conditioning inoperative (blower motor function OK) 	<ul style="list-style-type: none"> Fuse(s) Circuit(s) Air conditioning clutch A/C clutch diode Air conditioning clutch relay Refrigerant low-pressure switch Refrigerant high-pressure switch Refrigerant pressure transducer Control panel - climate control system Electronic automatic temperature control (EATC) module Powertrain control module (PCM) Refrigerant circuit Refrigerant quantity 	<ul style="list-style-type: none"> GO to Pinpoint Test D.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Air conditioning operating continuously 	<ul style="list-style-type: none"> Circuit(s) Air conditioning clutch Air conditioning clutch relay Powertrain control module (PCM) Refrigerant low-pressure switch Refrigerant high-pressure switch Control panel - climate control system Electronic automatic temperature control (EATC) module 	<ul style="list-style-type: none"> GO to Pinpoint Test E.
<ul style="list-style-type: none"> Electronic automatic temperature control (EATC) module inoperative (no display on the control unit) 	<ul style="list-style-type: none"> Fuse(s) Circuit(s) Electronic automatic temperature control (EATC) module 	<ul style="list-style-type: none"> GO to Pinpoint Test O.
<ul style="list-style-type: none"> Air recirculation flap(s) inoperative (air conditioning function OK) 	<ul style="list-style-type: none"> Circuit(s) Air recirculation flap(s) Operating cables for recirculated air flaps Recirculated air flap actuator Control panel - climate control system Electronic automatic temperature control (EATC) module 	<ul style="list-style-type: none"> Vehicles without electronic automatic temperature control (EATC) GO to Pinpoint Test F. Vehicles with electronic automatic temperature control (EATC) GO to Pinpoint Test G.
<ul style="list-style-type: none"> Malfunction of air distribution flap - vehicles with electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Circuit(s) Air distribution flap Actuator - air distribution flap Electronic automatic temperature control (EATC) module 	<ul style="list-style-type: none"> GO to Pinpoint Test H.
<ul style="list-style-type: none"> Malfunction of temperature control flap - vehicles with electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Circuit(s) Temperature control flap Temperature control flap actuator Electronic automatic temperature control (EATC) module 	<ul style="list-style-type: none"> GO to Pinpoint Test I.
<ul style="list-style-type: none"> Fault in footwell air outlet temperature sensor circuit - vehicles with electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Circuit(s) Air outlet temperature sensor, footwell 	<ul style="list-style-type: none"> GO to Pinpoint Test J.
<ul style="list-style-type: none"> Fault in centre vent air outlet temperature sensor circuit - vehicles with electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Circuit(s) Air outlet temperature sensor, centre nozzles 	<ul style="list-style-type: none"> GO to Pinpoint Test K.
<ul style="list-style-type: none"> Sun load sensor circuit faulty - vehicles with electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Circuit(s) Sun load sensor 	<ul style="list-style-type: none"> GO to Pinpoint Test L.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Passenger compartment temperature sensor circuit faulty - vehicles with electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Circuit(s) Passenger compartment temperature sensor 	<ul style="list-style-type: none"> GO to Pinpoint Test M.
<ul style="list-style-type: none"> Passenger compartment temperature sensor blower circuit faulty - vehicles with electronic automatic temperature control (EATC) 	<ul style="list-style-type: none"> Circuit(s) Passenger compartment temperature sensor 	<ul style="list-style-type: none"> GO to Pinpoint Test N.
<ul style="list-style-type: none"> Circuit of A/C demand signal short circuit to voltage 	<ul style="list-style-type: none"> Circuit(s) Electronic automatic temperature control (EATC) module Powertrain control module (PCM) 	<ul style="list-style-type: none"> GO to Pinpoint Test P.
<ul style="list-style-type: none"> Condensation water from the air conditioning system in the footwell 	<ul style="list-style-type: none"> Outlet line Rubber grommet 	<ul style="list-style-type: none"> CHECK condition of the outlet line and the rubber grommet and REPAIR if necessary.

System Checks**PINPOINT TEST A : BLOWER MOTOR FAULTY ■ INOPERATIVE****TEST CONDITIONS****DETAILS/RESULTS/ACTIONS**

A1: CHECK ALL SPEED SETTINGS OF THE BLOWER MOTOR	
	<input type="checkbox"/> Ignition switch in position II.
	<input checked="" type="checkbox"/> Move the blower switch through all its positions. <ul style="list-style-type: none"> Is the blower motor inoperative in all the switch positions? → Yes GO to A2. → No <ul style="list-style-type: none"> The blower motor is inoperative in switch positions 1,2 and/or 3: GO to A9. The blower motor is only inoperative in switch position 4: GO to A8.
A2: CHECK FUSE F49	
	<input checked="" type="checkbox"/> Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

☐ CHECK fuse F49 (CJB).

- Is the fuse OK?

→ **Yes**

GO to A3.

→ **No**

INSTALL A NEW fuse F49 (30 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

A3: CHECK THE VOLTAGE AT FUSE F49

☐ Connect fuse F49 (CJB).

☐ 2 Ignition switch in position II.

☐ Measure the voltage between fuse F49 (30 A) and ground.

- Does the meter display battery voltage?

→ **Yes**

GO to A4.

→ **No**

REPAIR the voltage supply to fuse F49 using the Wiring Diagrams. CHECK the operation of the system.

A4: CHECK VOLTAGE AT THE BLOWER MOTOR

☐ 1 Ignition switch in position 0.

☐ Disconnect connector C322 from blower motor.

☐ Ignition switch in position II.

☐ Measure the voltage between the blower motor, connector C322, pin 1, circuit 15-FA18 (GNIOG), wiring harness side and ground.

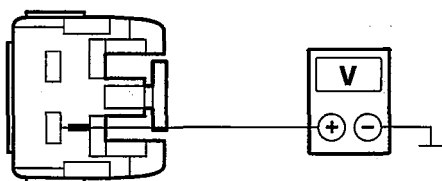
- Does the meter display battery voltage?

→ **Yes**

GO to A5.

→ **No**

LOCATE and REPAIR break in circuit 15-FA18 (GNIOG), between blower motor and fuse F49 using the Wiring Diagrams. CHECK the operation of the system.



VFE0028910

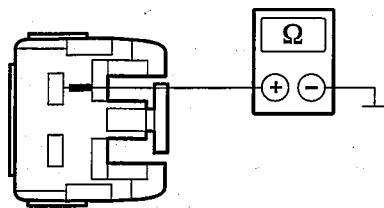
A5: CHECK GROUND CONNECTION OF BLOWER MOTOR

☐ 1 Ignition switch in position 0.

☐ Set the blower switch to position 4.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E0028911

DETAILS/RESULTS/ACTIONS

- 3 Measure the resistance between the blower motor, connector C322, pin 2, circuit 31S-FA18 (BWRD), wiring harness side and ground.

• Is a resistance of less than 2 Ohm registered?

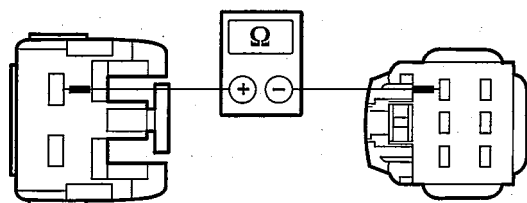
→ **Yes**

RENEW the blower motor. CHECK the operation of the system.

→ **No**

GO to A6.

A6: CHECK CIRCUIT BETWEEN THE BLOWER MOTOR AND THE BLOWER SWITCH FOR OPEN CIRCUIT



VFE0028912

- 1 Disconnect connector C324 from blower switch.

- 2 Measure the resistance between the blower motor, connector C322, pin 2, circuit 31S-FA18 (BWRD), wiring harness side and the blower switch, connector C324, pin 1, circuit 31S-FA33 (BWO), wiring harness side.

• Is a resistance of less than 2 Ohm registered?

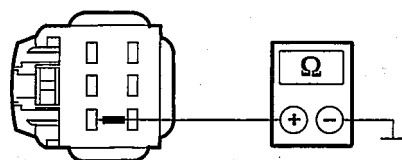
→ **Yes**

GO to A7.

→ **No**

LOCATE and REPAIR the break in circuit 31S-FA18 (BWRD) between the blower motor and soldered connection S269 using the Wiring Diagrams. CHECK the operation of the system.

A7: CHECK THE GROUND CONNECTION OF THE BLOWER SWITCH



VFE0028894

- 1 Measure the resistance between the blower switch, connector C324, pin 3, circuit 31-FA25 (BK), wiring harness side and ground.

• Is a resistance of less than 2 Ohm registered?

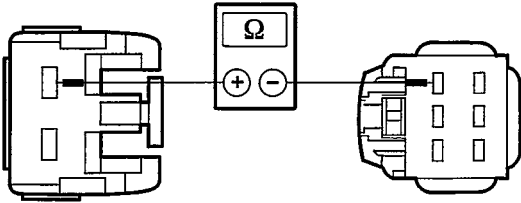
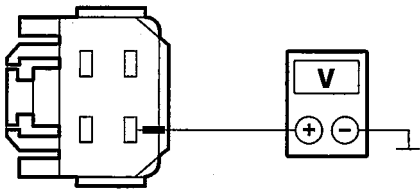
→ **Yes**

INSTALL A NEW blower switch. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in circuit 31-FA25 (BK) between the blower switch and ground connection G30 using the Wiring Diagrams. CHECK the operation of the system.

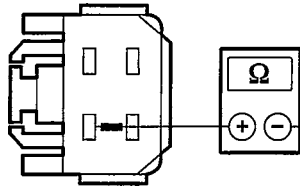
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A8: CHECK CIRCUIT BETWEEN THE BLOWER MOTOR AND THE BLOWER SWITCH FOR OPEN CIRCUIT	
	Ignition switch in position 0.
	2 Disconnect connector C324 from blower switch.
	3 Disconnect connector C322 from blower motor.
 <p>VFE0028912</p>	<p>4 Measure the resistance between the blower motor, connector C322, pin 2, circuit 31S-FA18 (BWRD), wiring harness side and the blower switch, connector C324, pin 1, circuit 31S-FA33 (BWOE), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? <p>→ Yes INSTALL A NEW blower switch. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in circuit 31S-FA33 (BWOE) between soldered connection S269 and the blower switch using the Wiring Diagrams. CHECK the operation of the system.</p>
A9: CHECK VOLTAGE AT BLOWER RESISTOR ASSEMBLY	
	1 Ignition switch in position 0.
	2 Disconnect connector C323 from blower resistor assembly.
	3 Set the blower switch to position 0.
	4 Ignition switch in position II.
 <p>VFE0028913</p>	<p>5 Measure the voltage between the blower resistor, connector C323, pin 4, circuit 31S-FA1 (BWBU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A10.</p> <p>→ No LOCATE and REPAIR the break in circuit 31S-FA1 (BWBU) between soldered connection S269 and the blower resistor assembly using the Wiring Diagrams. CHECK the operation of the system.</p>
A10: CHECK THE GROUND CONNECTION OF BLOWER RESISTOR ASSEMBLY - STAGE 1	
	1 Ignition switch in position 0.
	2 Set the blower switch to position 1.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



VFE0028918

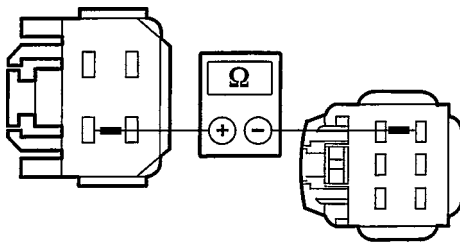
3 Measure the resistance between the blower resistor, connector C323, pin 2, circuit 31S-FA30 (BWH), wiring harness side and ground.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**
GO to A12.

→ **No**
GO to A11.

A11: CHECK CIRCUIT BETWEEN THE BLOWER RESISTOR ASSEMBLY AND THE BLOWER SWITCH FOR OPEN CIRCUIT



VFE0028917

1 Disconnect connector C324 from blower switch.

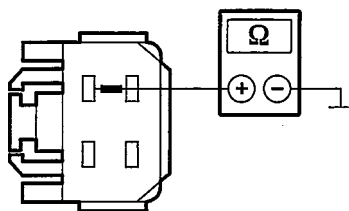
2 Measure the resistance between the blower resistor assembly, connector C323, pin 2, circuit 31S-FA30 (BWH), wiring harness side and the blower switch, connector C324, pin 4, circuit 31S-FA30 (BK/WH), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**
INSTALL A NEW blower switch. CHECK the operation of the system.

→ **No**
LOCATE and REPAIR the break in circuit 31S-FA30 (BWH) between the blower resistor assembly and the blower switch using the Wiring Diagrams. CHECK the operation of the system.

A12: CHECK THE GROUND CONNECTION OF BLOWER RESISTOR ASSEMBLY - STAGE 2



VFE0028914

1 Set the blower switch to position 2.

2 Measure the resistance between the blower resistor assembly, connector C323, pin 1, circuit 31s-FA31 (BK/YE), wiring harness side and ground.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**
GO to A14.

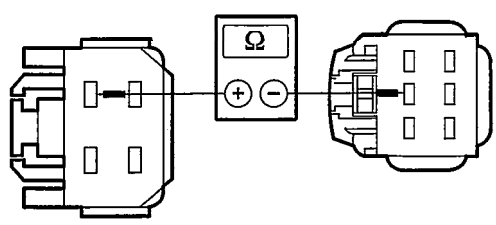
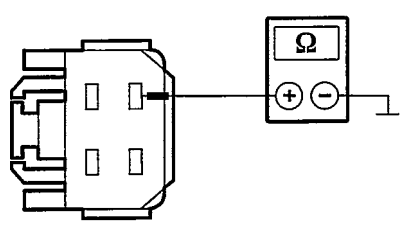
→ **No**
GO to A13.





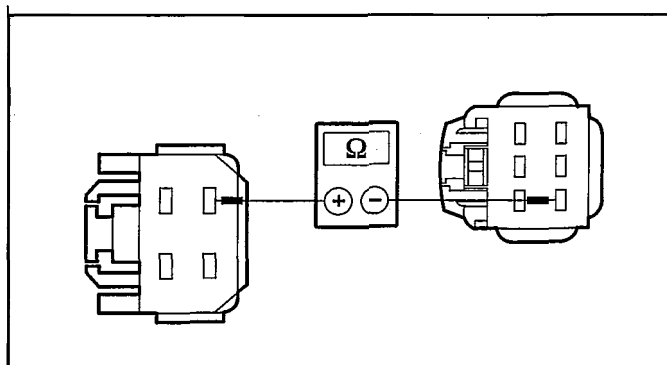
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DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A13: CHECK CIRCUIT BETWEEN THE BLOWER RESISTOR ASSEMBLY AND THE BLOWER SWITCH FOR OPEN CIRCUIT	
 <p>VFE0028915</p>	<ol style="list-style-type: none"> 1 Disconnect connector C324 from blower switch. 2 Measure the resistance between the blower resistor assembly, connector C323, pin 1, circuit 31s-FA31 (BWE), wiring harness side and the blower switch, connector C324, pin 2, circuit 31S-FA31 (BWE), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohm registered? → Yes INSTALL A NEW blower switch. CHECK the operation of the system. → No LOCATE and REPAIR the break in circuit 31S-FA31 (BWE) between the blower resistor assembly and the blower switch using the Wiring Diagrams. CHECK the operation of the system.
A14: CHECK THE GROUND CONNECTION OF BLOWER RESISTOR ASSEMBLY - STAGE 3	
 <p>VFE0028916</p>	<ol style="list-style-type: none"> 1 Set the blower switch to position 3. 2 Measure the resistance between the blower resistor assembly, connector C323, pin 3, circuit 31s-FA32 (BWBU), wiring harness side and ground. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohm registered? → Yes RENEW the blower resistor assembly. CHECK the operation of the system. → No GO to A15.
A15: CHECK CIRCUIT BETWEEN THE BLOWER RESISTOR ASSEMBLY AND THE BLOWER SWITCH FOR OPEN CIRCUIT	
	<ol style="list-style-type: none"> 1 Disconnect connector C324 from blower switch.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0028919

DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the blower resistor assembly, connector C323, pin 3, circuit 31s-FA32 (BWBU), wiring harness side and the blower switch, connector C324, pin 6, circuit 31S-FA32 (BWBU), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**

INSTALL A NEW blower switch. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in circuit 31S-FA32 (BWBU) between the blower resistor assembly and the blower switch using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST B : BLOWER INOPERATIVE/INCORRECT FUNCTION - VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B1: CHECK FUSE F49

- 1 Ignition switch in position 0.

- 2 CHECK fuse F49 (CJB).

- Is the fuse OK?

→ **Yes**

GO to B2.

→ **No**

RENEW fuse F49 (30 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

B2: CHECK THE VOLTAGE AT FUSE F49

- ☐ Connect fuse F49 (CJB).

- 2 Ignition switch in position II.

- 3 Measure the voltage between fuse F49 (30 A) and ground.

- Is battery voltage measured?

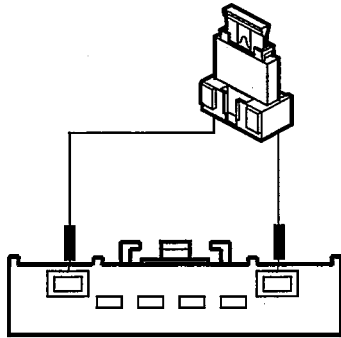
→ **Yes**

GO to B3.

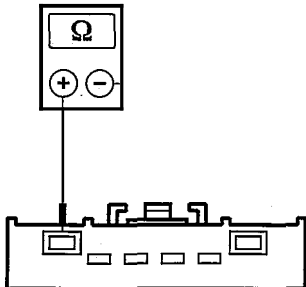
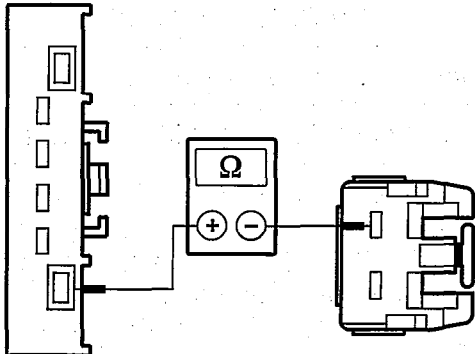
→ **No**

REPAIR the voltage supply to fuse F49 using the Wiring Diagrams. CHECK the operation of the system.

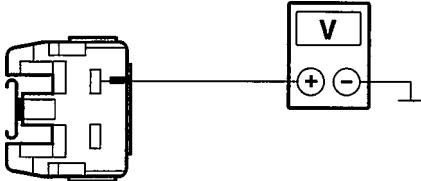
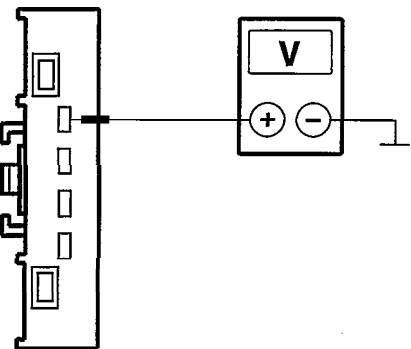
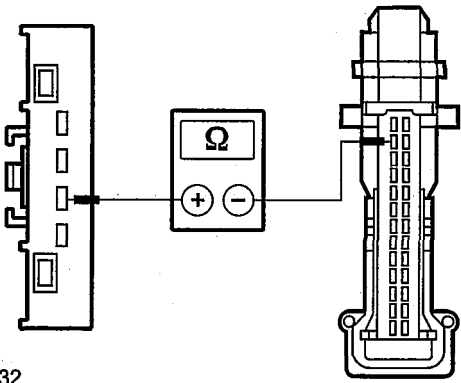
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B3: CHECK FUSE F38	
	<input checked="" type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> CHECK fuse F38 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to B4. → No INSTALL A NEW fuse F38 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
B4: CHECK THE VOLTAGE AT FUSE F38	
	<input checked="" type="checkbox"/> 1 Connect fuse F38 (CJB).
	<input type="checkbox"/> Ignition switch in position II.
	<input checked="" type="checkbox"/> 3 Measure the voltage between fuse F38 (7.5 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to B5. → No REPAIR the voltage supply to fuse F38 using the Wiring Diagrams. CHECK the operation of the system.
B5: CHECK THE CIRCUIT OF THE BLOWER MOTOR	
⚠ CAUTION: The test should be performed for a maximum of 10 seconds to prevent damage to the blower motor.	
	<input type="checkbox"/> Ignition switch in position 0.
	<input checked="" type="checkbox"/> 2 Disconnect Connector C362 from blower control module.
 <p>E56128</p>	<input type="checkbox"/> Using a fused test cable, bridge the blower control module, connector C362 , between pin 1, circuit 31S-FA18 (BWRD), wiring harness side and pin 6, circuit 31-FA18 (BK), wiring harness side.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>4 Ignition switch in position II.</p> <ul style="list-style-type: none"> Does the blower motor run at full speed? <p>→ Yes GO to B9.</p> <p>→ No GO to B6.</p>
B6: CHECK THE GROUND CONNECTION OF THE BLOWER CONTROL MODULE	
 <p>VFE0037960</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p><input type="checkbox"/> Measure the resistance between the blower control module, connector C362, pin 6, circuit 31-FA18 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to B7.</p> <p>→ No LOCATE and RECTIFY the break in circuit 31-FA18 (BK) between the blower control module and ground connection G30 using the Wiring Diagrams. CHECK the operation of the system.</p>
B7: CHECK THE CIRCUIT BETWEEN THE BLOWER MOTOR AND THE BLOWER CONTROL MODULE FOR OPEN CIRCUIT	
 <p>E56129</p>	<p>1 Disconnect connector C322 of blower motor.</p> <p>2 Measure the resistance between the blower motor, connector C322, pin 2, circuit 31S-FA18 (BK/RD), wiring harness side and the blower control module, connector C362, pin 1, circuit 31S-FA18 (BWRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes GO to B8.</p> <p>→ No LOCATE and REPAIR the break in circuit 31S-FA18 (BWRD) between the blower motor and the blower control module using the Wiring Diagrams. CHECK the operation of the system.</p>
B8: TEST THE VOLTAGE AT THE BLOWER MOTOR	
	<p>1 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

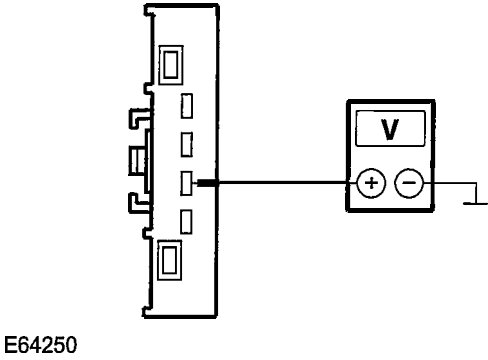
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0022394</p>	<p>2 Measure the voltage between the blower motor, connector C322, pin 1, circuit 15-FA18 (GN/OG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? → Yes RENEW the blower motor. CHECK the operation of the system. → No LOCATE and REPAIR the break in the circuit between the blower motor and fuse F49 using the Wiring Diagrams. CHECK the operation of the system.
B9: CHECK THE VOLTAGE AT THE BLOWER CONTROL MODULE	
 <p>E56130</p>	<p>1 Measure the voltage between the blower control module, connector C362, pin 2, circuit 15-FA45 (GN/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to B10. → No LOCATE and RECTIFY the break in the circuit between the blower control module and fuse F38 using the Wiring Diagrams. CHECK the operation of the system.
B10: CHECK THE CIRCUIT BETWEEN THE BLOWER CONTROL MODULE AND THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE FOR OPEN CIRCUIT	
 <p>E56132</p>	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Connector C367 of EATC module.</p> <p>3 Measure the resistance between the blower control module, connector C362, pin 4, circuit 49s-FA18 (BUNE), wiring harness side and the EATC module, connector C367, pin 15, circuit 49s-FA18 (BUNE), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? → Yes GO to B11. → No LOCATE and REPAIR the break in circuit 45S-FA18 (BUNE) between the blower control module and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

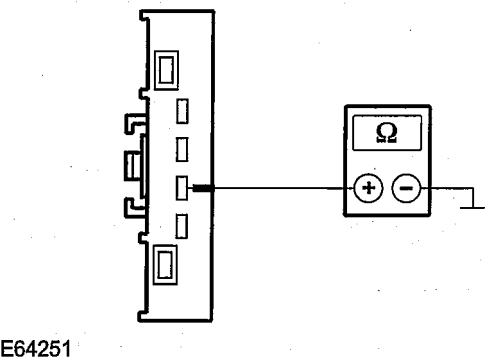
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B11: CHECK THE CIRCUIT BETWEEN THE BLOWER CONTROL MODULE AND THE EATC MODULE FOR SHORT TO VOLTAGE

 <p>E64250</p>	<p>1 Ignition switch in position II.</p> <p>2 Measure the voltage between the blower control module, connector C362, pin 4, circuit 49s-FA18 (BUNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a voltage measured? → Yes GO to B12. → No LOCATE and REPAIR the short to voltage in circuit 45s-FA18 (BUNE) between the blower control module and the EATC module using the Wiring Diagrams. CHECK the operation of the system.
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B12: CHECK THE CIRCUIT BETWEEN THE BLOWER CONTROL MODULE AND THE EATC MODULE FOR SHORT TO GROUND

 <p>E64251</p>	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Measure the resistance between the blower control module, connector C362, pin 4, circuit 49s-FA18 (BUNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of more than 10,000 ohms measured? → Yes RENEW the blower control module. CHECK the operation of the system. If the system is still inoperative, RENEW the EATC module. → No LOCATE and REPAIR the short to ground in circuit 45s-FA18 (BUNE) between the blower control module and the EATC module using the Wiring Diagrams. CHECK the operation of the system.
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PINPOINT TEST C : BLOWER MOTOR OPERATING CONTINUOUSLY - VEHICLES WITHOUT ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

C1: CHECK BLOWER SWITCH

	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Disconnect connector C324 from blower switch.</p> <p>3 Ignition switch in position II.</p>
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DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> Check function of blower motor. <ul style="list-style-type: none"> Does the blower motor run continuously? → Yes GO to C2. → No INSTALL A NEW blower switch. CHECK the operation of the system.
C2: CHECK CIRCUITS AT BLOWER RESISTOR ASSEMBLY	
	<input type="checkbox"/> Ignition switch in position 0.
	<input type="checkbox"/> Disconnect connector C323 from blower resistor assembly.
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> Check function of blower motor. <ul style="list-style-type: none"> Does the blower motor run continuously? → Yes LOCATE and RECTIFY the short to ground in the circuits connected to soldered connection S269 with the aid of the Wiring Diagrams. CHECK the operation of the system. → No LOCATE and REPAIR the short to ground in the circuits between the blower resistor assembly and the blower switch using the wiring diagrams. CHECK the operation of the system.

PINPOINT TEST D : AIR CONDITIONING INOPERATIVE (BLOWER MOTOR FUNCTION OK)

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D1: CHECK FUSE F4	
	<input type="checkbox"/> Ignition switch in position 0.

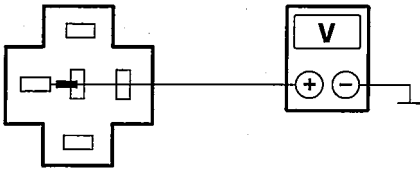
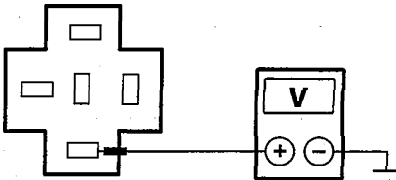
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>2 CHECK fuse F4 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to D2.</p> <p>→ No INSTALL A NEW fuse F4 (10 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams. - All except vehicles with diesel engines: In addition, CHECK and if necessary RENEW the air conditioning clutch diode. CHECK the operation of the system.</p>
D2: CHECK THE VOLTAGE AT FUSE F4	
	<p>1 Connect fuse F4 (CJB).</p> <p>2 Measure the voltage between fuse, F4 (10 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to D3.</p> <p>→ No REPAIR the voltage supply to fuse F4 using the Wiring Diagrams. CHECK the operation of the system.</p>
D3: CHECK FUSE F12	
	<p>(1) CHECK fuse F12 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to D4.</p> <p>→ No INSTALL A NEW fuse F12 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
D4: CHECK THE VOLTAGE AT FUSE F12	
	<p>(1) Connect fuse F12 (CJB).</p> <p>2 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

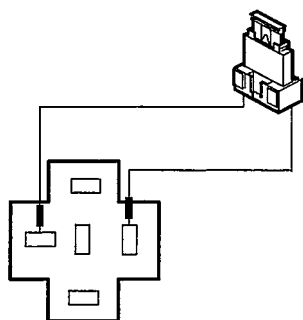
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Measure the voltage between fuse F12 (15 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles without electronic automatic temperature control (EATC): GO to D5. Vehicles with electronic automatic temperature control (EATC): GO to D7. <p>→ No</p> <p>REPAIR the voltage supply to fuse F12 using the Wiring Diagrams. CHECK the operation of the system.</p>
D5: CHECK FUSE F38	
	<p>1 Ignition switch in position 0.</p> <p>2 CHECK fuse F38 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes</p> <p>GO to D6.</p> <p>→ No</p> <p>RENEW fuse F38 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
D6: CHECK THE VOLTAGE AT FUSE F38	
	<p>1 Connect fuse F38 (CJB).</p> <p>2 Ignition switch in position II.</p> <p>3 Measure the voltage between fuse F38 (7.5 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes</p> <p>GO to D7.</p> <p>→ No</p> <p>REPAIR the voltage supply to fuse F38 using the Wiring Diagrams. CHECK the operation of the system.</p>
D7: CHECK THE VOLTAGE AT THE AIR CONDITIONING CLUTCH RELAY	
	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect Air conditioning clutch relay from socket C403 (relay box - engine compartment).</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS	RESULTS	ACTIONS
<div><p>VFE0028925</p></div>		3	Measure the voltage between the air conditioning clutch relay, socket C403, pin 3, circuit 29-FA12 (OG/BU), wiring harness side and ground.	<ul style="list-style-type: none">Does the meter display battery voltage? <p>→ Yes GO to D8.</p> <p>→ No LOCATE and RECTIFY the break in circuit 29-FA12 (OG/BU) between the air conditioning clutch relay and fuse F4 using the Wiring Diagrams. CHECK the operation of the system.</p>
D8: CHECK THE CONTROL VOLTAGE AT THE AIR CONDITIONING CLUTCH RELAY				
		Ignition switch in position II.		
<div><p>E58486</p></div>			Measure the voltage between the air conditioning clutch relay, socket C403, pin 1, circuit 15s-FA11 (GNNE), wiring harness side and ground.	<ul style="list-style-type: none">Does the meter display battery voltage? <p>→ Yes GO to D9.</p> <p>→ No LOCATE and RECTIFY the break in circuit 15S-FA11 (GNNE) between the air conditioning clutch relay and soldered connection S110 (vehicles with 2.0L Duratec-HE (M14) engine: S302) using the Wiring Diagrams. CHECK the operation of the system.</p>
D9: CHECK THE AIR CONDITIONING CLUTCH CIRCUIT				
		<input type="checkbox"/> Ignition switch in position 0.		

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0028926

DETAILS/RESULTS/ACTIONS

- 2** Use a fused test cable (10 A) at the A/C clutch relay to bridge between socket C403, pin 3, circuit 29-FA12 (OG/BU), wiring harness side and pin 5, circuit 15s-FA1 (GNIBU) (vehicles with diesel engine: circuit 15s-FA6 (GNNE)), wiring harness side.

- Does the air conditioning clutch work?

→ **Yes**

GO to D16.

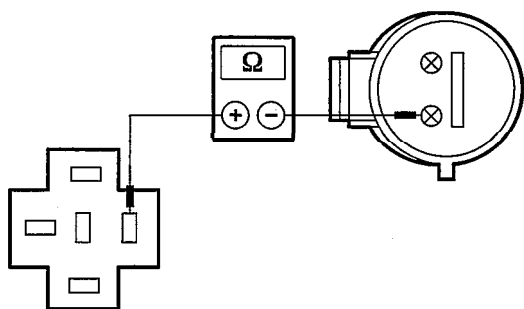
→ **No**

- All, except vehicles with 2.0L Duratec-HE (MI4) engine or 1.6L diesel engine:
GO to D10.

- Vehicles with 2.0L Duratec-HE (MI4) engine:
GO to D12.

- Vehicles with 1.6L diesel engine:
GO to D14.

D10: CHECK THE CIRCUIT BETWEEN THE A/C CLUTCH RELAY AND THE A/C CLUTCH FOR OPEN CIRCUIT - ALL VEHICLES, EXCEPT THOSE WITH 2.0L DURATEC-HE (MI4) ENGINE OR 1.6L DIESEL ENGINE



VFE0028927

- 1** Disconnect connector C401 from air conditioning clutch.

- 2** Measure the resistance between the air conditioning clutch relay, socket C403, pin 5, circuit 15s-FA1 (GN/BU) (vehicles with 1.4L diesel engine: circuit 15s-FA6 (GNNE)), wiring harness side and air conditioning clutch, connector C401, pin 1, circuit 15s-FA6 (GNNE), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**

GO to D11.

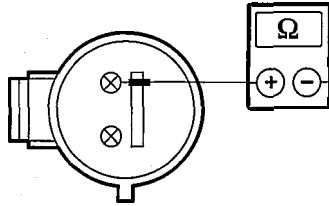
→ **No**

LOCATE and REPAIR the open circuit between the air conditioning clutch relay and air conditioning clutch using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D11: CHECK THE GROUND CONNECTION OF THE A/C CLUTCH-ALL VEHICLES EXCEPT THOSE WITH 2.0L DURATEC-HE (MI4) ENGINE OR 1.6L DIESEL ENGINE

VFE0028906

- ☐ Measure the resistance between the air conditioning clutch, connector C401, pin 2, circuit 31-FA6 (BK), wiring harness side and ground.

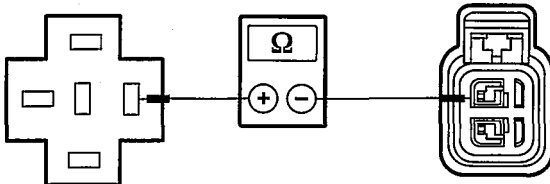
- Is a resistance of less than 2 Ohm registered?

→ **Yes**

INSTALL A NEW air conditioning clutch.
CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the air conditioning clutch and ground connection G22 (vehicles with 1.4L diesel engine: ground connection G24) with the aid of the Wiring Diagrams. CHECK the operation of the system.

D12: CHECK THE CIRCUIT BETWEEN THE A/C CLUTCH RELAY AND THE A/C CLUTCH FOR OPEN CIRCUIT - VEHICLES WITH 2.0L DURATEC-HE (MI4) ENGINE

E57636

- 1** Disconnect connector C398 from air conditioning clutch.

Measure the resistance between the A/C clutch relay, socket C403, pin 5, circuit 15s-FA1 (GN/BU), wiring harness side and the A/C clutch, connector C398, pin 1, circuit 15s-FA6 (GNNE), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

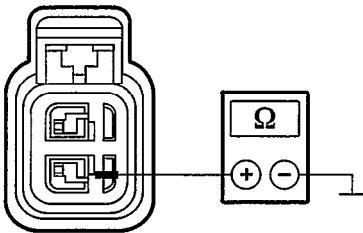
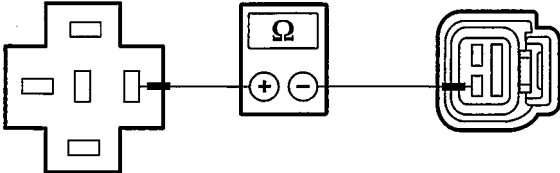
→ **Yes**

GO to D13.

→ **No**

LOCATE and REPAIR the open circuit between the air conditioning clutch relay and air conditioning clutch using the Wiring Diagrams. CHECK the operation of the system.

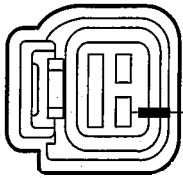
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS RESULTS ACTIONS
<p>D13: CHECK THE GROUND CONNECTION OF THE A/C CLUTCH - VEHICLES WITH 2.0L DURATEC-HE (MI4) ENGINE</p>  <p>E57637</p>	<p>1 Measure the resistance between the air conditioning clutch, connector C398, pin 2, circuit 31-FA6 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes RENEW the air conditioning clutch. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the air conditioning clutch and ground connection G22 with the aid of the Wiring Diagrams. CHECK the operation of the system.</p>
<p>D14: CHECK CIRCUIT BETWEEN A/C CLUTCH RELAY AND A/C CLUTCH FOR OPEN CIRCUIT - VEHICLES WITH 1.6L DIESEL ENGINE</p>  <p>E57638</p>	<p>1 Disconnect connector C399 from air conditioning clutch.</p> <p>2 Measure the resistance between the A/C clutch relay, socket C403, pin 5, circuit 15S-FA6 (GNNE), wiring harness side and the A/C clutch, connector C399, pin 1, circuit 15S-FA6 (GNNE), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to D15.</p> <p>→ No LOCATE and RECTIFY the break in circuit 15S-FA6 (GNNE) between the air conditioning clutch relay and the A/C clutch using the Wiring Diagrams. CHECK the operation of the system.</p>

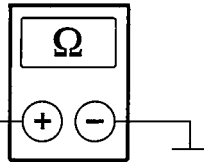
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D15: CHECK THE GROUND CONNECTION OF THE A/C CLUTCH - VEHICLES WITH 1.6L DIESEL ENGINE

E57639



- 1 Measure the resistance between the air conditioning clutch, connector C399, pin 2, circuit 31-FA6 (BK), wiring harness side and ground.

Is a resistance of less than 2 Ohms registered?

→ **Yes**

RENEW the air conditioning clutch. CHECK the operation of the system.

→ **No**

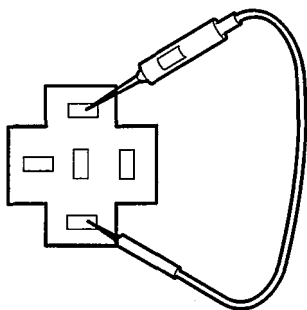
LOCATE and RECTIFY the open circuit in circuit 31-FA6 (BK) between the A/C clutch and ground connection G22 using the Wiring Diagrams. CHECK the operation of the system.

D16: CHECK THE GROUND CONNECTION OF THE AIR CONDITIONING CLUTCH RELAY

- ☐ Ignition switch in position III.
- 2 Run the engine at idle speed.
- 3 Switch on the blower.
- 4 Switch on the air-conditioning system.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0028922

DETAILS/RESULTS/ACTIONS



CAUTION: It is imperative that a test lamp with a nominal voltage of **12 V** and a nominal power rating of **1.2 W** is used during the following test. Otherwise the powertrain control module (PCM) could be damaged, or the test could deliver incorrect results.

- 5** Use a test lamp (12 V, 1.2 W) to check the voltage at the air conditioning clutch relay, socket C403, between pin 1, circuit 15S-FA11 (GNNE), wiring harness side and pin 2, circuit 91S-FA11 (BKIYE), wiring harness side.

- Does the test lamp illuminate?

→ Yes

RENEW the air conditioning clutch relay. CHECK the operation of the system.

- All except vehicles with diesel engines: In addition, CHECK and if necessary RENEW the air conditioning clutch diode. CHECK the operation of the system.

→ No

- All, except vehicles with diesel engine or 2.0L Duratec-HE (MI4) engine: GO to D17.

- Vehicles with 2.0L Duratec-HE (MI4) engine: GO to D19.

- Vehicles with 1.4L diesel engine: GO to **D28**.

- Vehicles with 1.6L diesel engine: GO to D30.

D17: CHECK A/C REQUEST SIGNAL AT PCM - ALL, EXCEPT VEHICLES WITH DIESEL ENGINE OR 2.0L DURATEC-HE (MI4) ENGINE

1 Ignition switch in position 0.

2 Disconnect connector C343 from the PCM.

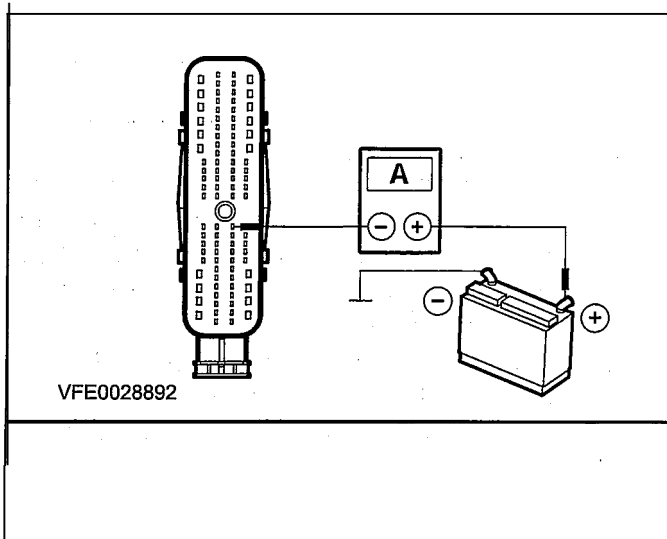
3 Ignition switch in position II.

4 Switch on the blower.

5 Switch on the air-conditioning system.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.

6 Measure the current between the PCM, connector C343, pin F22, circuit 31S-FA87 (BWGN), wiring harness side and battery voltage.

- Is a current of more than 8 mA measured?

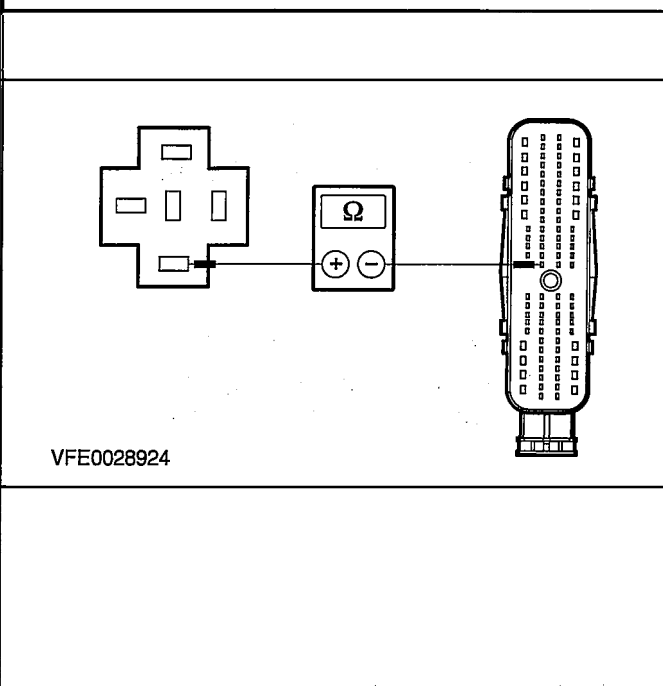
→ Yes
GO to D18.

→ No
GO to D32.

D18: CHECK THE CIRCUIT BETWEEN THE A/C CLUTCH RELAY AND THE PCM FOR OPEN CIRCUIT - ALL VEHICLES, EXCEPT THOSE WITH DIESEL ENGINE OR 2.0L DURATEC-HE (M14) ENGINE

NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.



1 Ignition switch in position 0.

2 Measure the resistance between the air conditioning clutch relay, socket C403, pin 2, circuit 91S-FA11 (BK/YE), wiring harness side and the PCM, connector C343, pin M26, circuit 91S-FA11 (BK/YE), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ Yes
CHECK PCM with WDS. RENEW PCM if necessary. CHECK the operation of the system.

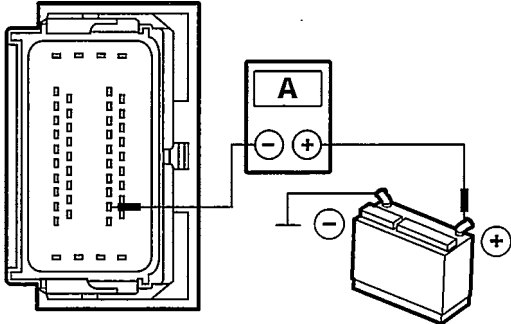
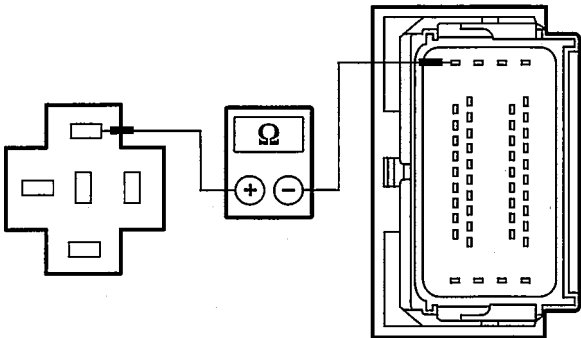
→ No
LOCATE and RECTIFY the break in circuit 91S-FA11 (BK/YE) between the air conditioning clutch relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.

D19: CHECK THE A/C REQUEST SIGNAL AT THE PCM - VEHICLES WITH 2.0L DURATEC-HE (M14) ENGINE

1 Ignition switch in position 0.

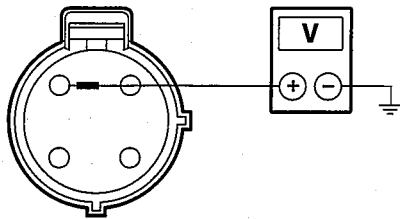
2 Disconnect connector C380 from PCM.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>E57640</p>	<p><input checked="" type="checkbox"/> 3 Ignition switch in position II.</p> <p><input checked="" type="checkbox"/> 4 Switch on the blower.</p> <p><input type="checkbox"/> Switch on the air-conditioning system.</p> <p>CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.</p> <p><input checked="" type="checkbox"/> 6 Measure the current between the PCM, connector C380, pin 14, circuit 31S-FA17A (BWRD), wiring harness side and battery voltage.</p> <ul style="list-style-type: none"> Is a current of more than 8 mA measured? → Yes GO to D20. → No GO to D32.
D20: CHECK THE CIRCUIT BETWEEN THE A/C CLUTCH RELAY AND THE PCM FOR OPEN CIRCUIT - VEHICLES WITH 2.0L DURATEC-HE (M14) ENGINE	
 <p>E57641</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p><input checked="" type="checkbox"/> 2 Measure the resistance between the air conditioning clutch relay, socket C403, pin 2, circuit 91S-FA11 (BKNE), wiring harness side and the PCM, connector C380, pin 1, circuit 91S-FA11 (BKNE), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? → Yes GO to D21. → No LOCATE and RECTIFY the break in circuit 91S-FA11 (BKNE) between the air conditioning clutch relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.
D21: CHECK THE VOLTAGE AT THE REFRIGERANT PRESSURE TRANSDUCER	
	<p><input checked="" type="checkbox"/> 1 Connect connector C380 from PCM.</p> <p><input type="checkbox"/> Disconnect Connector C427 from refrigerant pressure transducer.</p> <p><input checked="" type="checkbox"/> 3 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



E0011401

DETAILS/RESULTS/ACTIONS

- 4 Measure the voltage between the refrigerant pressure transducer, connector C427, pin 2, circuit 7-FA88 (YEM), wiring harness side and ground.

- Is the voltage measured between 4.8 Volts and 5.1 Volts?

→ **Yes**
GO to D24.

→ **No**
- No voltage measured:
GO to D22.
- The voltage measured is more than 6 Volts:
GO to D23.

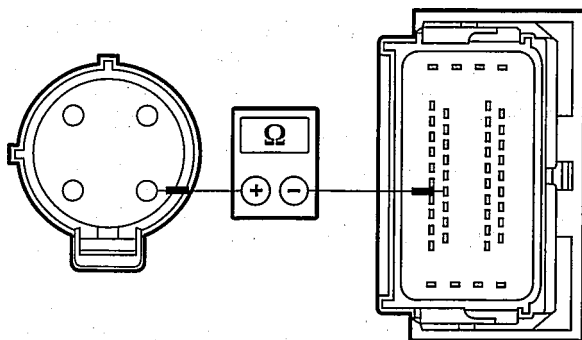
D22: CHECK FOR OPEN CIRCUIT BETWEEN THE REFRIGERANT PRESSURE TRANSDUCER AND THE PCM

NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

m Ignition switch in position 0.

☐ Disconnect connector C380 from PCM.



E57642

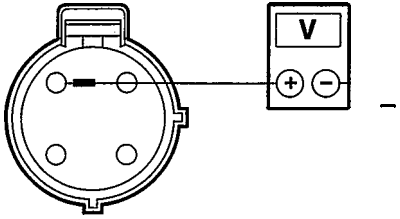
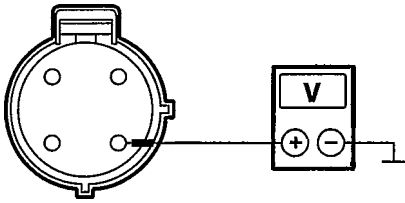
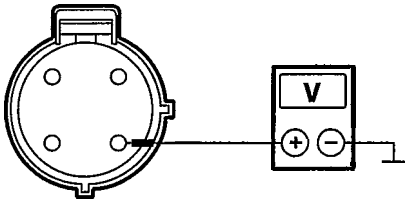
- ☐ Measure the resistance between the refrigerant pressure transducer, connector C427, pin 2, circuit 7-FA88 (YEM), wiring harness side and PCM, connector C380, pin 28, circuit 7-FA88 (YEM), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**
Use WDS to CHECK the operation of the PCM, if necessary RENEW the PCM. CHECK the operation of the system.

→ **No**
LOCATE and REPAIR the break in circuit 7-FA88 (YE/VT) between the refrigerant pressure transducer and the PCM using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D23: CHECK THE CIRCUIT BETWEEN THE REFRIGERANT PRESSURE TRANSDUCER AND THE PCM FOR A SHORT TO VOLTAGE SUPPLY	
<p>NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.</p>	
<p>NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.</p>	
 <p>E0011401</p>	<p>1 Ignition switch in position 0.</p>
	<p><input type="checkbox"/> Disconnect connector C380 from PCM.</p>
	<p>3 Ignition switch in position II.</p>
 <p>VFE0038807</p>	<p><input type="checkbox"/> Measure the voltage between the refrigerant pressure transducer, connector C427, pin 2, circuit 7-FA88 (Y E M), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a voltage measured? → Yes LOCATE and REPAIR the short to voltage in circuit 7-FA88 (Y E M) between the refrigerant pressure transducer and the PCM using the Wiring Diagrams. CHECK the operation of the system. → No Use WDS to CHECK the operation of the PCM, if necessary RENEW the PCM. CHECK the operation of the system.
D24: CHECK THE CONTROL VOLTAGE AT THE REFRIGERANT PRESSURE TRANSDUCER	
 <p>VFE0038807</p>	<p><input type="checkbox"/> Measure the voltage between the refrigerant pressure transducer, connector C427, pin 3, circuit 8-FA88 (WH/VT), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a voltage of approx. 4 volts measured? → Yes GO to D27. → No <ul style="list-style-type: none"> - No voltage measured: GO to D25. - The voltage measured is more than 5.5 Volts: GO to D26.

DIAGNOSIS AND TESTING

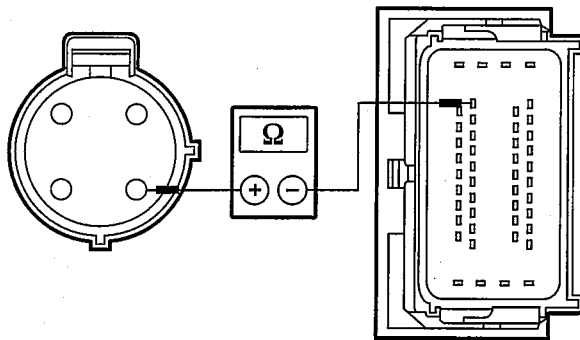
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D25: CHECK FOR OPEN CIRCUIT BETWEEN THE REFRIGERANT PRESSURE TRANSDUCER AND THE PCM

NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.



E57643

☐ Ignition switch in position 0.

2 Disconnect connector C380 from PCM.

3 Measure the resistance between the refrigerant pressure transducer, connector C427, pin 3, circuit 8-FA88 (WH/VT), wiring harness side and PCM, connector C380, pin 13, circuit 8-FA88 (WH/VT), wiring harness side.

• Is a resistance of less than 2 Ohms registered?

→ Yes

Use WDS to CHECK the operation of the PCM, if necessary RENEW the PCM. CHECK the operation of the system.

→ No

LOCATE and REPAIR the break in circuit 8-FA88 (WH/VT) between the refrigerant pressure transducer and the PCM using the Wiring Diagrams. CHECK the operation of the system.

D26: CHECK THE CIRCUIT BETWEEN THE REFRIGERANT PRESSURE TRANSDUCER AND THE PCM FOR A SHORT TO VOLTAGE SUPPLY

NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

1 Ignition switch in position 0.

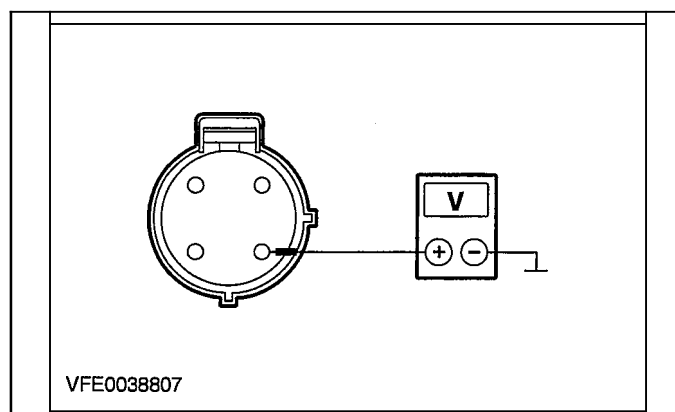
☐ Disconnect connector C380 from PCM.

3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



- 4 Measure the voltage between the refrigerant pressure transducer, connector C427, pin 3, circuit 8-FA88 (WHM), wiring harness side and ground.

• Is a voltage measured?

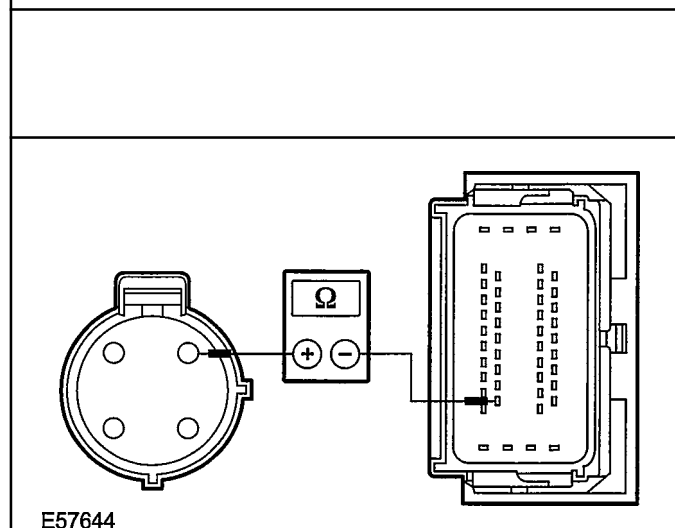
→ **Yes**

LOCATE and REPAIR the short to voltage in circuit 8-FA88 (WH/VT) between the refrigerant pressure transducer and the PCM using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

Use WDS to CHECK the operation of the PCM, if necessary RENEW the PCM. CHECK the operation of the system.

D27: CHECK FOR OPEN CIRCUIT BETWEEN THE REFRIGERANT PRESSURE TRANSDUCER AND THE PCM



- 1 Ignition switch in position 0.

- 2 Disconnect connector C380 from PCM.

- 3 Measure the resistance between the refrigerant pressure transducer, connector C427, pin 1, circuit 9-FA88 (BN/WH), wiring harness side and PCM, connector C380, pin 25, circuit 9-RJ14A (BN), wiring harness side.

• Is a resistance of less than 2 Ohms registered?

→ **Yes**

RENEW the refrigerant pressure transducer. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in circuit 9-FA88 (BNNVH) between the refrigerant pressure transducer and soldered connection S307 using the Wiring Diagrams. CHECK the operation of the system.

D28: CHECK THE A/C REQUEST SIGNAL AT THE PCM

- 1 Ignition switch in position 0.

- 2 Disconnect Connector C370 (vehicles with electronic exhaust gas recirculation valve (EGR): C375) from PCM.

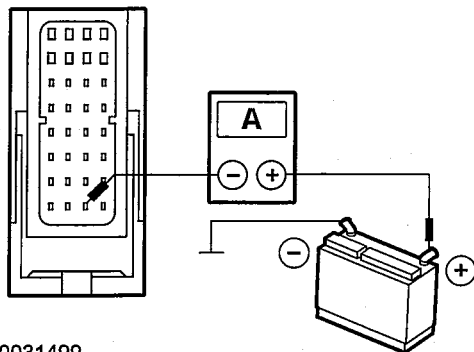
- 3 Ignition switch in position II.

- 4 Switch on the blower.

- 5 Switch on the A/C.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0031499

DETAILS/RESULTS/ACTIONS

CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.

Measure the current between the PCM, connector C370 (vehicles with electronic exhaust gas recirculation valve (EGR): C375), pin A2, circuit 31s-FA87 (BWGN), wiring harness side and battery voltage.

- Is a current of more than 8 mA measured?

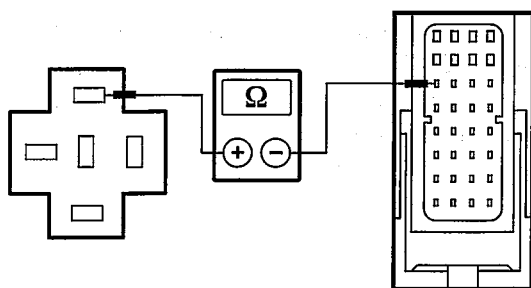
→ **Yes**
GO to D29.

→ **No**
GO to D32.

D29: CHECK FOR OPEN CIRCUIT BETWEEN AIR CONDITIONING CLUTCH RELAY AND PCM

NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.



E57645

1 Ignition switch in position 0.

2 Disconnect Connector C372 (vehicles with electronic exhaust gas recirculation valve (EGR): C377) from PCM.

3 Measure the resistance between the air conditioning clutch relay, socket C403, pin 2, circuit 91S-FA11 (BK/YE), wiring harness side and the PCM, connector C372 (vehicles with electronic exhaust gas recirculation valve (EGR): C377), pin F4, circuit 91S-FA11 (BWE), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**
CHECK PCM with WDS. RENEW PCM if necessary. CHECK the operation of the system.

→ **No**
LOCATE and RECTIFY the break in circuit 91S-FA11 (BWE) between the air conditioning clutch relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.

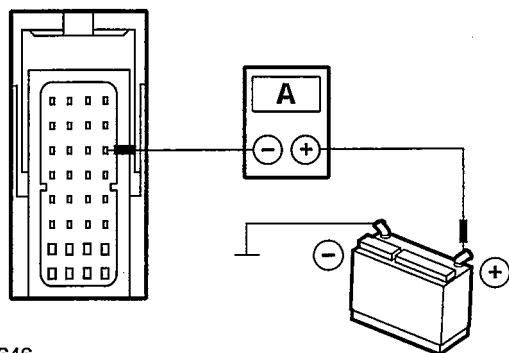
DIAGNOSIS AND TESTING

TEST CONDITIONS

/ S/A TI I

D30: CHECK THE **A/C** REQUEST SIGNAL AT THE PCM • VEHICLES **WITH** 1.6L DIESEL ENGINE

- 1 Ignition switch in position 0.
- 2 Disconnect connector C384 from PCM.
- 3 Ignition switch in position II.
- 4 Switch on the blower.
- 5 Switch on the A/C.



E57646

CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 **mA**.

- 6 Measure the current between the PCM, connector C384, pin C4, circuit 31S-FA87 (BKIGN), wiring harness side and battery voltage.
 - Is a current of more than 8 **mA** measured?
 - Yes
GO to D31.
 - No
GO to D32.

D31: CHECK CIRCUIT BETWEEN **A/C** CLUTCH RELAY AND PCM FOR OPEN CIRCUIT - **VEHICLES WITH 1.6L DIESEL ENGINE**

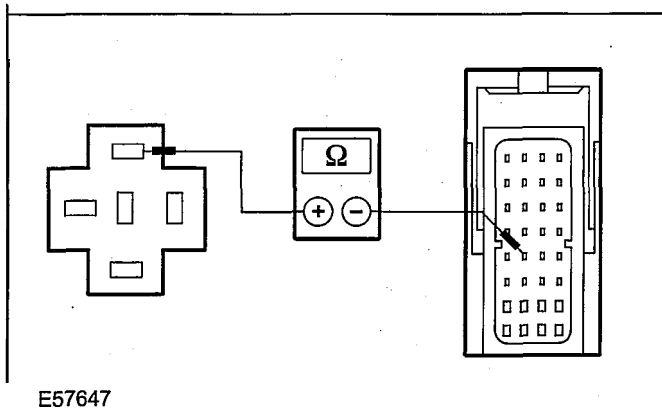
NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the air conditioning clutch relay, socket C403, pin 2, circuit 91S-FA11 (BWE), wiring harness side and the PCM, connector C384, pin E2, circuit 91S-FA11 (BWE), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK PCM with WDS. RENEW PCM if necessary. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in circuit 91S-FA11 (BWE) between the air conditioning clutch relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.

D32: CHECK THE QUANTITY OF REFRIGERANT IN THE SYSTEM

- 1** Ignition switch in position 0.

- ☐ Check the quantity of refrigerant in the system.
REFER to: Specifikationen (412-00, Specifications).

- Is the quantity of refrigerant in the system in accordance with the manufacturer's specifications?

→ **Yes**

- All, except vehicles with 2.0L Duratec-HE (MI4) engine:
GO to D33.

- Vehicles with 2.0L Duratec-HE (MI4) engine:
GO to D35.

→ **No**

FILL the system with the correct quantity of refrigerant. REFER to: Air Conditioning (A/C) System Recovery, Evacuation and Charging (412-00, General Procedures).
CHECK the operation of the system.

D33: CHECK THE A/C REQUEST SIGNAL AT THE REFRIGERANT HIGH-PRESSURE SWITCH

- 1** Disconnect connector C405 from refrigerant high-pressure switch.

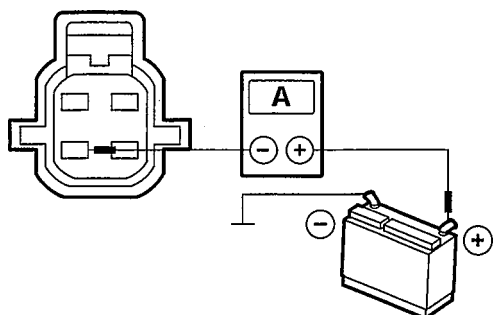
- 2** Ignition switch in position II.

- 3** Switch on the blower.

- ☐ Switch on the air-conditioning system.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0028907

DETAILS/RESULTS/ACTIONS

CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.

Measure the current between the refrigerant high-pressure switch, connector C405, pin 4, circuit 31S-FA17A (BWRD), wiring harness side and battery voltage.

- Is a current of more than 8 mA measured?

→ **Yes**

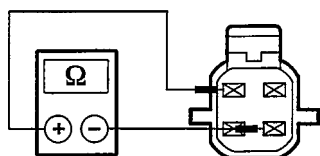
GO to D34.

→ **No**

GO to D35.

D34: CHECK REFRIGERANT HIGH-PRESSURE SWITCH

NOTE: Make certain that the refrigerant pressure is in the range between 3.0 and 10.5 bar (temperature dependent). If the pressure is higher, perform a refrigerant circuit Quick Check. If the pressure is lower, check the refrigerant circuit for leaks.



VFE0028893

Ignition switch in position 0.

- Measure the resistance at the refrigerant high-pressure switch, connector C405, between pin 1 and pin 4, component side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**

LOCATE and RECTIFY the break in circuit 31S-FA87 (BWGN) between the PCM and the refrigerant high-pressure switch using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

RENEW the refrigerant high-pressure switch. CHECK the operation of the system.

D35: CHECK THE A/C REQUEST SIGNAL AT THE REFRIGERANT LOW-PRESSURE SWITCH

Ignition switch in position 0.

- Disconnect connector C402 from refrigerant low-pressure switch.

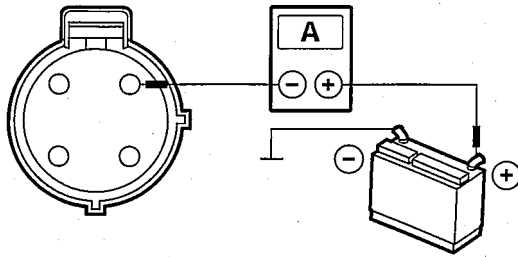
Ignition switch in position II.

Switch on the blower.

Switch on the air-conditioning system.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0028909

DETAILS/RESULTS/ACTIONS

CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.

6 Measure the current between the refrigerant low-pressure switch, connector C402, pin 1, circuit 31S-FA17 (BWRD), wiring harness side and battery voltage.

• Is a current of more than 8 mA measured?

→ **Yes**

GO to D36.

→ **No**

- Vehicles without electronic automatic temperature control (EATC):

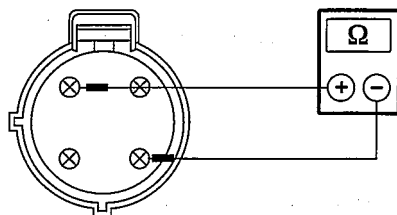
GO to D37.

- Vehicles with electronic automatic temperature control (EATC):

GO to D42.

D36: CHECK REFRIGERANT LOW-PRESSURE SWITCH

NOTE: Make certain that the refrigerant pressure is in the range between 3.0 and 10.5 bar (temperature dependent). If the pressure is higher, perform a refrigerant circuit Quick Check. If the pressure is lower, check the refrigerant circuit for leaks.



VFE0024372

1 Ignition switch in position 0.

Measure the resistance at the refrigerant low-pressure switch, connector C402, between pin 1 and pin 4, component side.

• Is a resistance of less than 2 Ohm registered?

→ **Yes**

- All, except vehicles with 2.0L Duratec-HE (MI4) engine:

LOCATE and REPAIR the break in circuit 31S-FA17A (BWRD) between the refrigerant high-pressure switch and the refrigerant low-pressure switch using the Wiring Diagrams. CHECK the operation of the system.

- Vehicles with 2.0L Duratec-HE (MI4) engine:

LOCATE and REPAIR the break in circuit 31S-FA17A (BWRD) between the refrigerant low-pressure switch and the PCM using the Wiring Diagrams. CHECK the operation of the system.

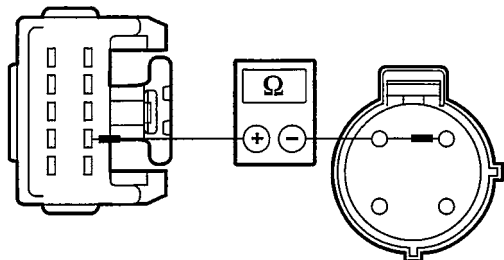
→ **No**

RENEW the refrigerant low-pressure switch. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

D37: CHECK CIRCUIT BETWEEN CONTROL PANEL OF CLIMATE CONTROL SYSTEM AND REFRIGERANT LOW-PRESSURE SWITCH FOR OPEN CIRCUIT

VFE0028897

1 Ignition switch in position 0.

2 Disconnect connector C302 from the control panel of the climate control system.

3 Measure the resistance between the control panel for the climate control system, connector C302, pin 2, circuit 31S-FA17 (BWRD), wiring harness side and the refrigerant low-pressure switch, connector C402, pin 1, circuit 31S-FA17 (BWRD), wiring harness side.

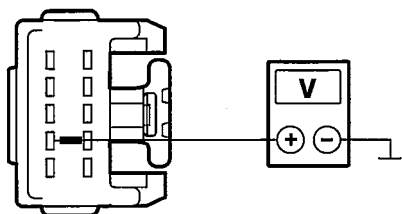
- Is a resistance of less than 2 Ohm registered?

→ **Yes**

GO to D38.

→ **No**

LOCATE and REPAIR the break in circuit 31S-FA17 (BWRD) between the control panel for the climate control system and the refrigerant low-pressure switch using the Wiring Diagrams. CHECK the operation of the system.

D38: CHECK THE VOLTAGE AT THE CONTROL PANEL FOR THE CLIMATE CONTROL SYSTEM

VFE0028905

1 Measure the voltage between the control panel for the climate control system, connector C302, pin 7, circuit 29-FA10 (OG/GN), wiring harness side and ground.

- Is battery voltage measured?

→ **Yes**

GO to D39.

→ **No**

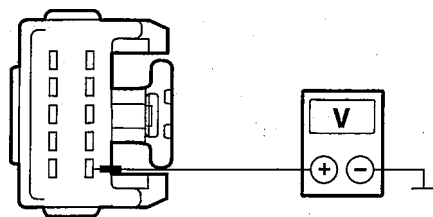
LOCATE and RECTIFY the open circuit between the control panel for the climate control system and fuse F4 using the Wiring Diagrams. CHECK the operation of the system.

D39: CHECK THE VOLTAGE AT THE CONTROL PANEL FOR THE CLIMATE CONTROL SYSTEM

1 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0028895

DETAILS/RESULTS/ACTIONS

- 2** Measure the voltage between the control panel for the climate control system, connector C302, pin 1, circuit 15-FA90 (GN/BK), wiring harness side and ground.

- Does the meter display battery voltage?

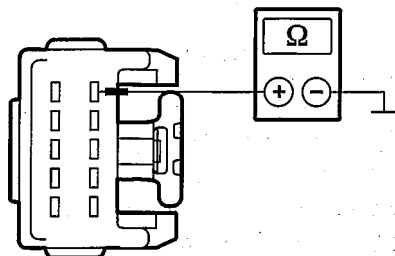
→ **Yes**
GO to D40.

→ **No**
LOCATE and RECTIFY the open circuit between the control panel for the climate control system and soldered connection S266 using the Wiring Diagrams. CHECK the operation of the system.

D40: CHECK FOR OPEN CIRCUIT BETWEEN THE CONTROL PANEL FOR THE CLIMATE CONTROL SYSTEM AND THE BLOWER SWITCH

- 1** Ignition switch in position 0.

- 2** Set the blower switch to position 1.



E51566

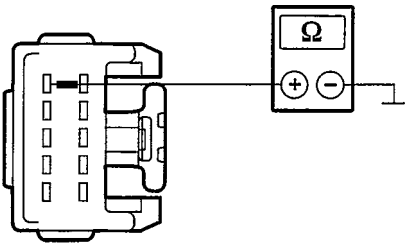
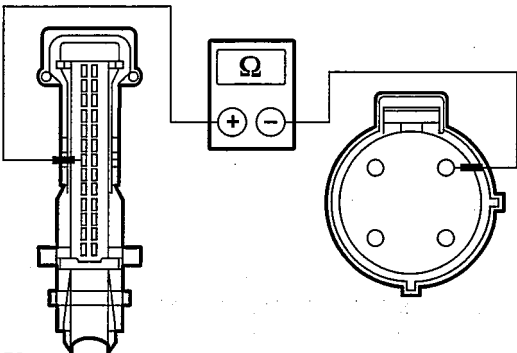
- ☐ Measure the resistance between the control panel for the climate control system, connector C302, pin 5, circuit 31S-FA13 (BWOOG), wiring harness side and ground.

- Is a resistance of less than 2 ohms registered?

→ **Yes**
GO to D41.

→ **No**
LOCATE and RECTIFY the break in circuit 31S-FA13 (BWOOG) between the control panel for the climate control system and the blower switch using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D41: CHECK THE GROUND CONNECTION OF THE CONTROL PANEL FOR THE CLIMATE CONTROL SYSTEM	
 <p>VFE0028896</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the control panel for the climate control system, connector C302, pin 10, circuit 31-LH27 (BK), wiring harness side and ground. <ul style="list-style-type: none"> • Is a resistance of less than 2 ohms registered? <ul style="list-style-type: none"> → Yes CHECK and if necessary RENEW the control panel for the climate control system. CHECK the operation of the system. → No LOCATE and REPAIR the open circuit between the control panel for the climate control system and ground connection G12 using the Wiring Diagrams. CHECK the operation of the system.
D42: CHECK CIRCUIT BETWEEN EATC MODULE AND REFRIGERANT LOW-PRESSURE SWITCH FOR OPEN CIRCUIT	
 <p>E64252</p>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect Connector C366 of EATC module. 3 Measure the resistance between the EATC module, connector C366, pin 7, circuit 31S-FA17 (BWRD), wiring harness side and the refrigerant low-pressure switch, connector C402, pin 1, circuit 31S-FA17 (BWRD), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohm registered? <ul style="list-style-type: none"> → Yes CHECK the EATC module, if necessary INSTALL a new one. CHECK the operation of the system. → No LOCATE and REPAIR the break in circuit 31S-FA17 (BWRD) between the EATC module and the refrigerant low-pressure switch using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST E : AIR CONDITIONING OPERATING CONTINUOUSLY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: CHECK AIR CONDITIONING CLUTCH RELAY	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect air conditioning clutch relay from socket C403 (relay box, engine compartment).

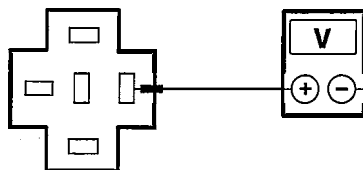
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

- | | |
|---|---|
| 3 | Ignition switch in position III. |
| 4 | Run the engine at idle speed. |
| 5 | Check operation of air conditioning clutch. <ul style="list-style-type: none"> Does the air conditioning clutch work? <p>→ Yes
GO to E2.</p> <p>→ No
GO to E3.</p> |

E2: CHECK CIRCUIT BETWEEN AIR CONDITIONING CLUTCH RELAY AND AIR CONDITIONING CLUTCH FOR SHORT TO VOLTAGE



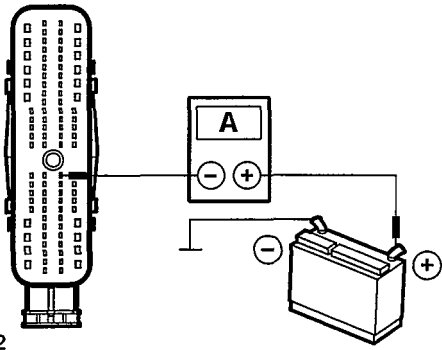
VFE0033613

- | | |
|---|--|
| 1 | Measure the voltage between the air conditioning clutch relay, socket C403, pin 5, circuit 15S-FA1 (GN/BU) (vehicles with diesel engine: 15s-FA6 (GNNE)), wiring harness side and ground. <ul style="list-style-type: none"> Is a voltage measured? <p>→ Yes
LOCATE and REPAIR the short to voltage in the circuit between the air conditioning clutch relay and air conditioning clutch using the Wiring Diagrams.</p> <p>→ No
INSTALL A NEW air conditioning clutch.
CHECK the operation of the system.</p> |
|---|--|

E3: CHECK OPERATION OF AIR CONDITIONING CLUTCH RELAY

- | | |
|---|--------------------------------|
| 1 | Ignition switch in position 0. |
|---|--------------------------------|

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div> <input type="checkbox"/> Check the air conditioning clutch relay according to the component check at the end of this section. </div> <div> <ul style="list-style-type: none"> Is the air conditioning clutch relay OK? <p>→ Yes</p> <ul style="list-style-type: none"> -All, except vehicles with diesel engine or 2.0L Duratec-HE (MI4) engine: GO to E4. - Vehicles with 1.4L diesel engine: GO to E6. - Vehicles with 1.6L diesel engine: GO to E8. -Vehicles with 2.0L Duratec-HE (MI4) engine: GO to E10. <p>→ No</p> <p>RENEW the air conditioning clutch relay. CHECK the operation of the system.</p> <ul style="list-style-type: none"> - All except vehicles with diesel engines: In addition, CHECK and if necessary RENEW the air conditioning clutch diode. CHECK the operation of the system. </div>
E4: CHECK A/C REQUEST SIGNAL AT THE POWERTRAIN CONTROL MODULE (PCM) - ALL, EXCEPT VEHICLES WITH DIESEL ENGINE OR 2.0L DURATEC-HE (MI4) ENGINE	
	<div> <input checked="" type="checkbox"/> 1 Disconnect connector C343 from the PCM. </div> <div> <input type="checkbox"/> Ignition switch in position II. </div> <div> <input type="checkbox"/> Switch on the blower. </div> <div> <input type="checkbox"/> Switch off the air conditioning system. </div>
<div>  <p>VFE0028892</p> </div>	<div> <p>CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.</p> </div> <div> <input type="checkbox"/> Measure the current between the PCM, connector C343, pin F22, circuit 31S-FA87 (BWGN), wiring harness side and battery voltage. </div> <div> <ul style="list-style-type: none"> Is a current of more than 8 mA measured? <p>→ Yes GO to E11.</p> <p>→ No GO to E5.</p> </div>

DIAGNOSIS AND TESTING

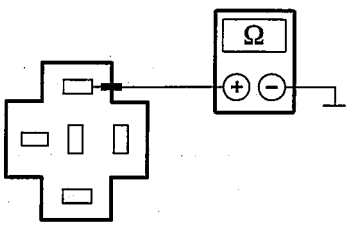
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

E5: CHECK CIRCUIT BETWEEN AIR CONDITIONING CLUTCH RELAY AND PCM FOR SHORT TO GROUND - ALL, EXCEPT VEHICLES WITH DIESEL ENGINE

NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

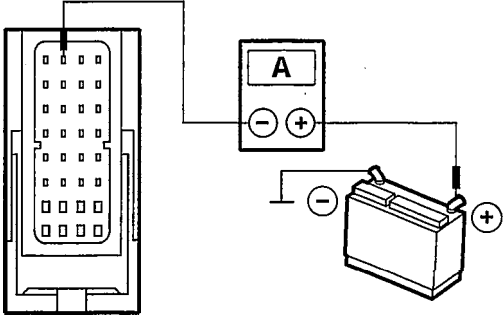
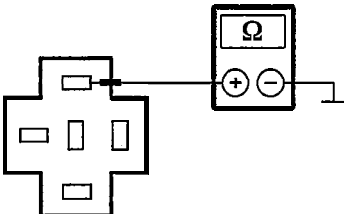
NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

 <p>VFE46149</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the air conditioning clutch relay, socket C403, pin 2, circuit 91s-FA11 (BK/YE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of more than 10,000 Ohm measured? <p>→ Yes CHECK PCM with WDS. RENEW PCM if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the short to ground in circuit 91S-FA11 (BK/YE) between the air conditioning clutch relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.</p>
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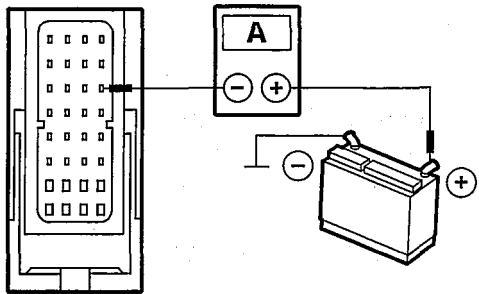
E6: CHECK THE A/C REQUEST SIGNAL AT THE POWERTRAIN CONTROL MODULE (PCM) - VEHICLES WITH 1.4L DIESEL ENGINE

	<p>1 Disconnect Connector C370 (vehicles with electronic exhaust gas recirculation valve (EGR): C375) from PCM.</p> <p>Ignition switch in position II.</p> <p>3 Switch on the blower.</p> <p>Switch off the air conditioning system.</p>
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DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS/RESULTS/ACTIONS
 E64646		<p>CAUTION:In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.</p> <p>Measure the current between the PCM, connector C370 (vehicles with electronic exhaust gas recirculation valve (EGR): C375), pin A2, circuit 31S-FA87 (BWGN), wiring harness side and battery voltage.</p> <ul style="list-style-type: none">Is a current of more than 8 mA measured? <p>→ Yes GO to E II.</p> <p>→ No GO to E7.</p>
E7: CHECK CIRCUIT BETWEEN AIR CONDITIONING CLUTCH RELAY AND PCM FOR SHORT TO GROUND - VEHICLES WITH 1.4L DIESEL ENGINE		
<p>NOTE:If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.</p>		
<p>NOTE:Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.</p>		
		Ignition switch in position 0.
		Disconnect Connector C372 (vehicles with electronic exhaust gas recirculation valve (EGR): C377) from PCM.
 VFE46149		<p>Measure the resistance between the air conditioning clutch relay, socket C403, pin 2, circuit 91S-FA11 (BK/YE), wiring harness side and ground.</p> <p>Is a resistance of more than 10,000 Ohm measured?</p> <p>→ Yes CHECK PCM with WDS. RENEW PCM if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the short to ground in circuit 91S-FA11 (BK/YE) between the air conditioning clutch relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.</p>

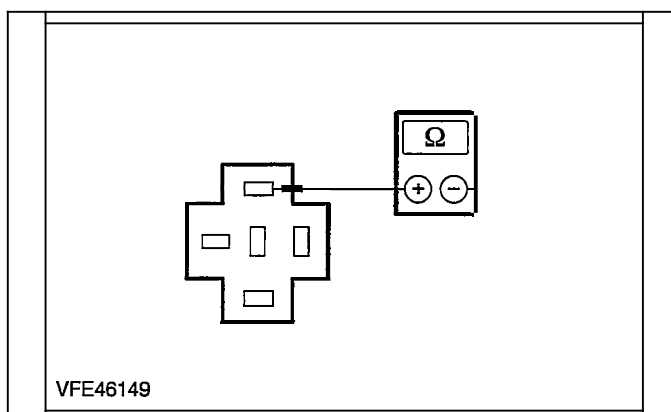
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E8: CHECK THE A/C REQUEST SIGNAL AT THE POWERTRAIN CONTROL MODULE (PCM) - VEHICLES WITH 1.6L DIESEL ENGINE	
	<ol style="list-style-type: none"> 1 Disconnect connector C384 from PCM. 2 Ignition switch in position II. 3 Switch on the blower. 4 Switch off the air conditioning system.
 <p>E64647</p>	<p>A CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.</p> <p><input type="checkbox"/> Measure the current between the PCM, connector C384, pin C4, circuit 31S-FA87 (BWGN), wiring harness side and battery voltage.</p> <ul style="list-style-type: none"> • Is a current of more than 8 mA measured? <p>→ Yes GO to E11.</p> <p>→ No GO to E9.</p>
E9: CHECK CIRCUIT BETWEEN AIR CONDITIONING CLUTCH RELAY AND PCM FOR SHORT TO GROUND - VEHICLES WITH 1.6L DIESEL ENGINE	
<p>NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.</p>	
<p>NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.</p>	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0.
	<ol style="list-style-type: none"> 2 Disconnect connector C382 from PCM.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



Measure the resistance between the air conditioning clutch relay, socket C403, pin 2, circuit 91S-FA11 (BWE), wiring harness side and ground.

- Is a resistance of more than 10,000 ohms measured?

→ Yes

CHECK PCM with WDS. RENEW PCM if necessary. CHECK the operation of the system.

→ No

LOCATE and RECTIFY the short to ground in circuit 91s-FA11 (BWE) between the air conditioning clutch relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.

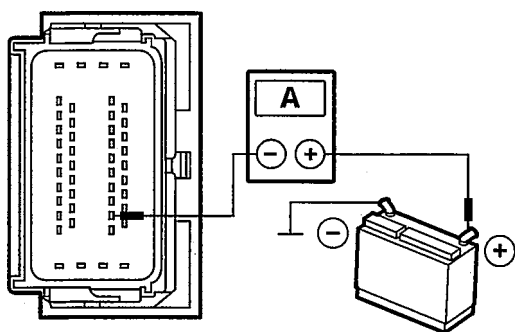
E10: CHECK THE A/C REQUEST SIGNAL AT THE POWERTRAIN CONTROL MODULE (PCM) - VEHICLES WITH 2.0L DURATEC-HE (M14) ENGINE

- ☐ Disconnect connector C380 from PCM.

Ignition switch in position II.

- ☐ Switch on the blower.

- ☐ Switch off the air conditioning system.



CAUTION: In order to avoid damaging the vehicle, the measuring device should be operated in a measuring range up to a maximum of 200 mA.

Measure the current between the PCM, connector C380, pin 14, circuit 31S-FA17A (BWRD), wiring harness side and battery voltage.

- Is a current of more than 8 mA measured?

→ Yes

- Vehicles without electronic automatic temperature control:
GO to E11.

- Vehicles with electronic automatic temperature control:
GO to E13.

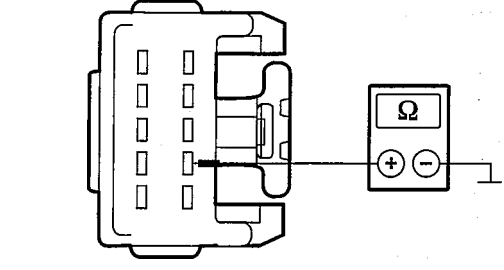
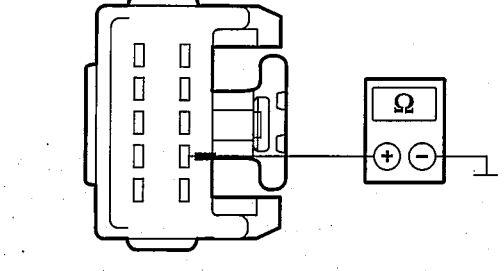
→ No

GO to E5.

E11: CHECK CIRCUIT BETWEEN CONTROL PANEL FOR CLIMATE CONTROL SYSTEM AND PCM FOR SHORT TO GROUND

Ignition switch in position 0.

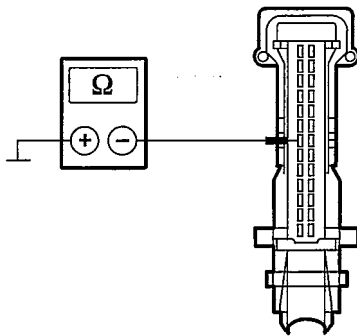
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033615</p>	<p>2 Disconnect connector C302 from the control panel of the climate control system.</p> <p>3 Measure the resistance between the control panel for the climate control system, connector C302, pin 2, circuit 31s-FA17 (BWRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of more than 10,000 Ohm measured? <p>→ Yes CHECK and if necessary RENEW the control panel for the climate control system. CHECK the operation of the system.</p> <p>→ No GO to E12.</p>
E12: CHECK CIRCUIT BETWEEN CONTROL PANEL FOR CLIMATE CONTROL SYSTEM AND REFRIGERANT LOW-PRESSURE SWITCH FOR SHORT TO GROUND	
 <p>VFE0033615</p>	<p>1 Disconnect Connector C402 from the refrigerant low-pressure switch.</p> <p>2 Measure the resistance between the control panel for the climate control system, connector C302, pin 2, circuit 31S-FA17 (BWRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of more than 10,000 ohms measured? <p>→ Yes GO to E15.</p> <p>→ No LOCATE and REPAIR short to ground in circuit 31S-FA17 (BWRD) between the control panel for the climate control system and the refrigerant low-pressure switch using the Wiring Diagrams. CHECK the operation of the system.</p>
E13: CHECK CIRCUIT BETWEEN ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE AND PCM FOR SHORT TO GROUND	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Connector C366 of EATC module.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



E64253

3 Measure the resistance between the EATC module, connector C366, pin 7, circuit 31S-FA17 (BWRD), wiring harness side and ground.

- Is a resistance of more than 10,000 ohms measured?

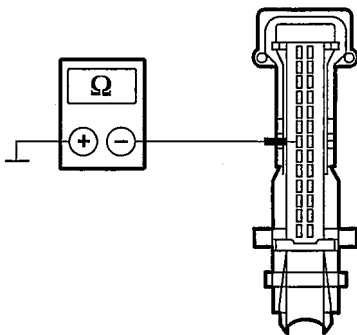
→ **Yes**

CHECK the EATC module, if necessary
INSTALL a new one. CHECK the operation of the system.

→ **No**

GO to E14.

E14: CHECK CIRCUIT BETWEEN EATC MODULE AND REFRIGERANT LOW-PRESSURE SWITCH FOR SHORT TO GROUND



E64253

1 Disconnect connector C402 from refrigerant low-pressure switch.

2 Measure the resistance between the EATC module, connector C366, pin 7, circuit 31S-FA17 (BWRD), wiring harness side and ground.

- Is a resistance of more than 10,000 Ohm measured?

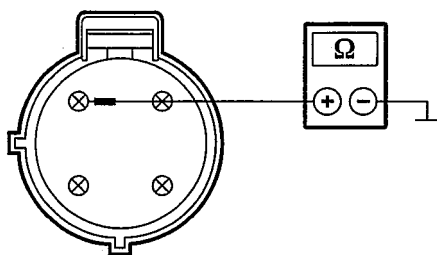
→ **Yes**

GO to E15.

→ **No**

LOCATE and REPAIR short to ground in circuit 31S-FA17 (BWRD) between the EATC module and the refrigerant low-pressure switch using the Wiring Diagrams. CHECK the operation of the system.

E15: CHECK REFRIGERANT LOW-PRESSURE SWITCH



VFE0033616

1 Measure the resistance between the refrigerant low-pressure switch, connector C402, pin 1, component side and ground.

- Is a resistance of more than 10,000 Ohm measured?

→ **Yes**

- Vehicles with 2.0L Duratec-HE (MI4) engine:
RENEW the refrigerant low-pressure switch.
CHECK the operation of the system.

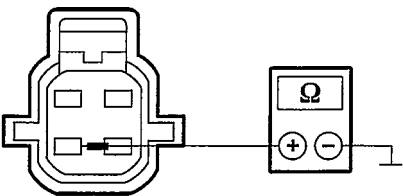
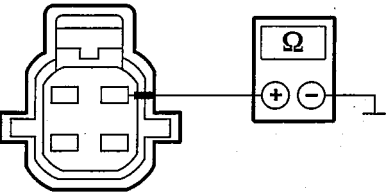
- All, except vehicles with 2.0L Duratec-HE (MI4) engine:

GO to E16.

→ **No**

RENEW the refrigerant low-pressure switch.
CHECK the operation of the system.

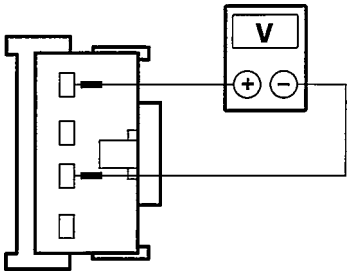
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E16: CHECK CIRCUIT BETWEEN REFRIGERANT HIGH-PRESSURE SWITCH AND REFRIGERANT LOW-PRESSURE SWITCH FOR SHORT TO GROUND	
 <p>VFE0033617</p>	<ol style="list-style-type: none"> 1 Disconnect connector C405 from refrigerant high-pressure switch. 2 Measure the resistance between refrigerant high-pressure switch, connector C405, pin 4, circuit 31S-FA17A (BWRD), wiring harness side and ground. <ul style="list-style-type: none"> • Is a resistance of more than 10,000 Ohm measured? → Yes GO to E17. → No LOCATE and REPAIR short to ground in circuit 31S-FA17A (BWRD) between the refrigerant high-pressure switch and the refrigerant low-pressure switch using the Wiring Diagrams. CHECK the operation of the system.
E17: CHECK CIRCUIT BETWEEN REFRIGERANT HIGH-PRESSURE SWITCH AND REFRIGERANT LOW-PRESSURE SWITCH FOR SHORT TO GROUND	
 <p>VFE0033618</p>	<ol style="list-style-type: none"> 1 Measure the resistance between refrigerant high-pressure switch, connector C405, pin 1, circuit 31S-FA87 (BWGN), wiring harness side and ground. <ul style="list-style-type: none"> • Is a resistance of more than 10,000 Ohm measured? → Yes RENEW the refrigerant high-pressure switch. CHECK the operation of the system. → No LOCATE and RECTIFY the short to ground in circuit 31S-FA87 (BWGN) between the refrigerant high-pressure switch and the PCM using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST F : RECIRCULATED AIR FLAPS INOPERATIVE (AIR CONDITIONING SYSTEM OK)
- VEHICLES WITHOUT ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

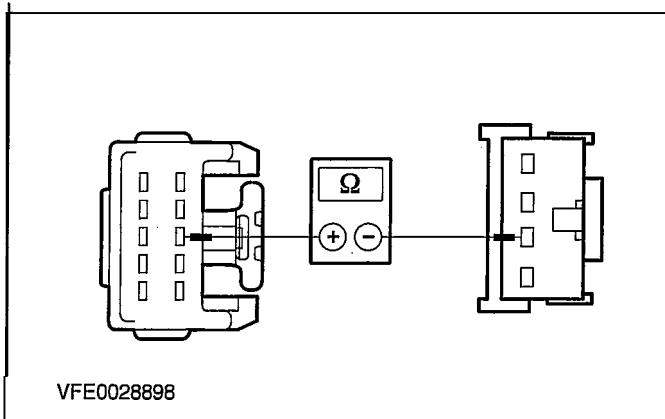
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
F1: CHECK VOLTAGE AT RECIRCULATED AIR FLAP ACTUATOR	
	<p>Ignition switch in position 0.</p> <ol style="list-style-type: none"> 2 Disconnect connector C611 from recirculated air flap actuator.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0028920</p>	<p><input type="checkbox"/> Ignition switch in position II.</p> <p>4 Measure the voltage at the recirculated air flap actuator, connector C611, between pin 4, circuit 15s-FA76 (GN/RD) and pin 2, circuit 31S-FA76 (BWO), wiring harness side.</p>
	<p>5 Actuate the recirculated air switch several times during the measurement.</p> <ul style="list-style-type: none"> Is a voltage of more than 10 V measured with alternating polarity? <p>→ Yes CHECK the mountings and the operation of the recirculated air flaps and recirculated air flap actuation cables. If the recirculated air flaps and the recirculated air flap actuation cables are OK, RENEW the recirculated air flap actuator. CHECK the operation of the system.</p> <p>→ No GO to F2.</p>
F2: CHECK FOR OPEN CIRCUIT BETWEEN RECIRCULATED AIR FLAP ACTUATOR AND CONTROL PANEL OF CLIMATE CONTROL SYSTEM	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C302 from the control panel of the climate control system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the control panel of the climate control system, connector C302, pin 3, circuit 31s-FA76 (BWOG), wiring harness side and the recirculated air flap actuator, connector C611, pin 2, circuit 31s-FA76 (BWOG), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

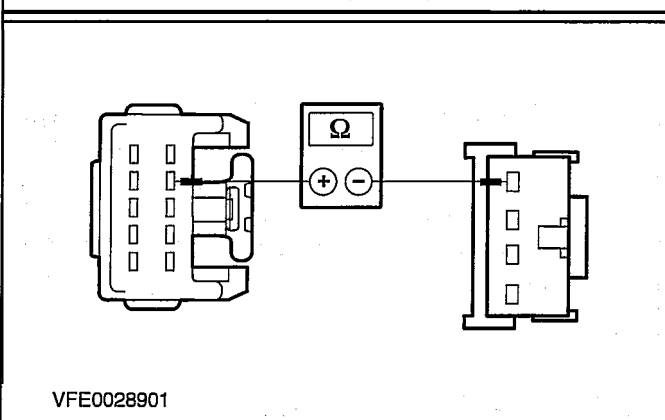
→ **Yes**

GO to F3.

→ **No**

LOCATE and REPAIR the break in circuit 31s-FA76 (BWOG) between the control panel for the climate control system and the recirculated air flap actuator using the Wiring Diagrams. CHECK the operation of the system.

F3: CHECK FOR OPEN CIRCUIT BETWEEN RECIRCULATED AIR FLAP ACTUATOR AND CONTROL PANEL OF CLIMATE CONTROL SYSTEM



- 1** Measure the resistance between the control panel for the climate control system, connector C302, pin 4, circuit 15s-FA76 (GNIRD), wiring harness side and the recirculated air flap actuator, connector C611, pin 4, circuit 15s-FA76 (GNIRD), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**

GO to F4.

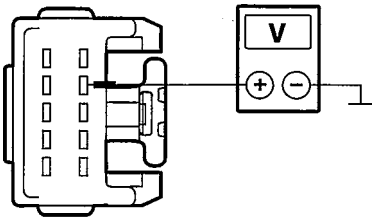
→ **No**

LOCATE and REPAIR the break in circuit 15s-FA76 (GNIRD) between the control panel for the climate control system and the recirculated air flap actuator using the Wiring Diagrams. CHECK the operation of the system.

F4: CHECK CIRCUIT BETWEEN RECIRCULATED AIR FLAP ACTUATOR AND CONTROL PANEL OF CLIMATE CONTROL SYSTEM FOR SHORT TO VOLTAGE

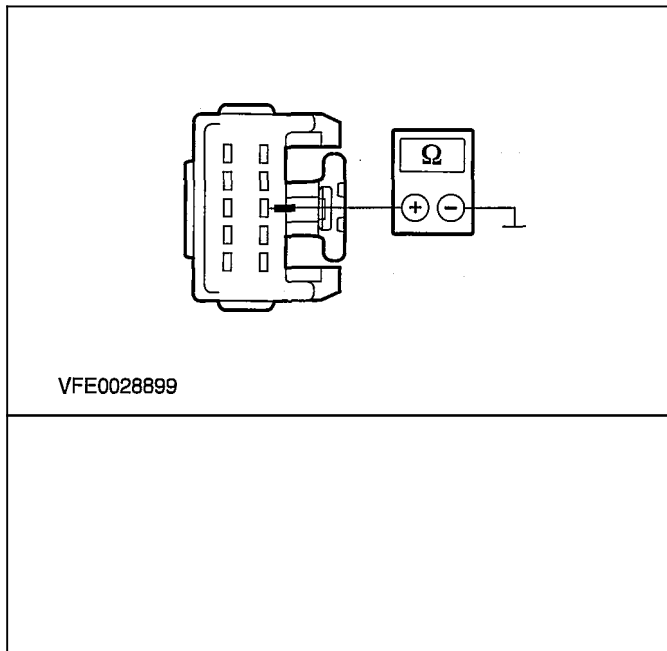
- 1** Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<div><p>VFE0028903</p></div>	<div><div>2</div>Measure the voltage between the control panel for climate control system, connector C302, pin 4, circuit 15s-FA76 (GNIRD), wiring harness side and ground.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

☐ Measure the resistance between the control panel for the climate control system, connector C302, pin 3, circuit 31s-FA76 (BWOOG), wiring harness side and ground.

- Is a resistance greater than 10,000 Ohms measured in both cases?

→ **Yes**

CHECK and if necessary RENEW the control panel for the climate control system. CHECK the operation of the system.

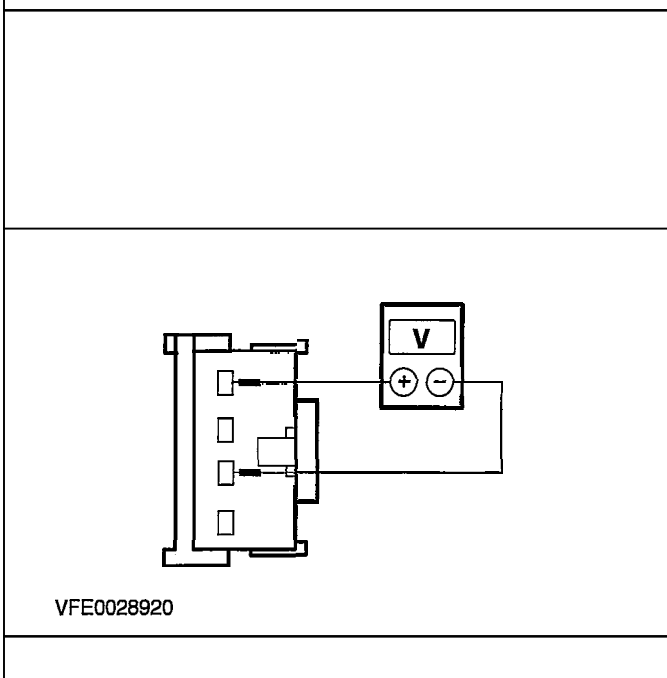
→ **No**

LOCATE and RECTIFY the short to ground in the relevant circuit between the control panel for the climate control system and the recirculated air flap actuator using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST G : RECIRCULATED AIR FLAPS INOPERATIVE (AIR CONDITIONING SYSTEM OK) - VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

G1: CHECK VOLTAGE AT RECIRCULATED AIR FLAP ACTUATOR

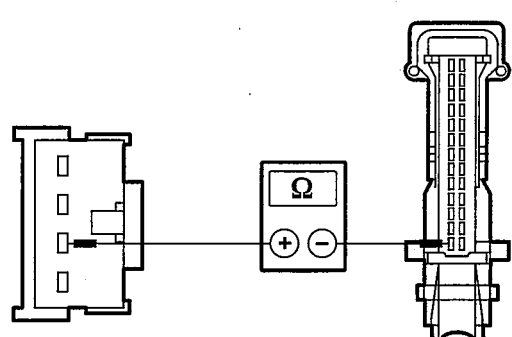
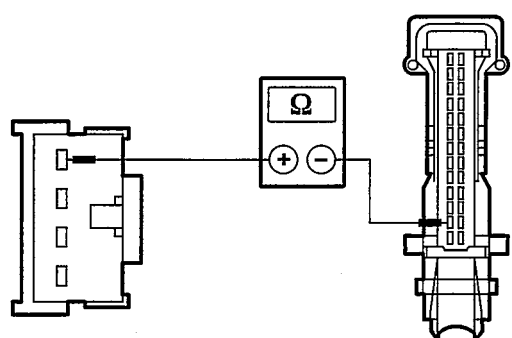
1 Ignition switch in position 0.

2 Disconnect connector C611 from recirculated air flap actuator.

3 Ignition switch in position II.

4 Measure the voltage at the recirculated air flap actuator, connector C611, between pin 4, circuit 32-FA76 (WH/BU), and Pin 2, circuit 33-FA76 (YE/BU) wiring harness side.

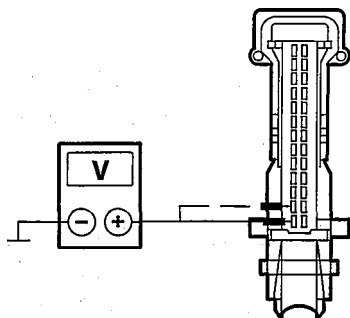
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>5 Actuate the recirculated air switch several times during the measurement.</p> <ul style="list-style-type: none"> Is a voltage of more than 10 V measured with alternating polarity? <p>→ Yes CHECK the mountings and the operation of the recirculated air flaps and recirculated air flap actuation cables. If the recirculated air flaps and the recirculated air flap actuation cables are OK, RENEW the recirculated air flap actuator. CHECK the operation of the system.</p> <p>→ No GO to G2.</p>
G2: CHECK THE CIRCUIT BETWEEN THE RECIRCULATED AIR FLAP ACTUATOR AND THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE FOR OPEN CIRCUIT	
	<p>1 Ignition switch in position 0.</p>
	<p>2 Disconnect Connector C366 of EATC module.</p>
 <p>E64254</p>	<p>3 Measure the resistance between the recirculated air flap actuator, connector C611, pin 2, circuit 33-FA76 (YE/BU), wiring harness side and the EATC module, connector C366, pin 1, circuit 33-FA76 (YE/BU), wiring harness side.</p>
 <p>E64255</p>	<p>4 Measure the resistance between the recirculated air flap actuator, connector C611, pin 4, circuit 32-FA76 (WH/BU), wiring harness side and the EATC module, connector C366, pin 2, circuit 32-FA76 (WH/BU), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms measured in both cases? <p>→ Yes GO to G3.</p> <p>→ No LOCATE and REPAIR the break in the relevant circuit between the recirculated air flap actuator and the EATC module using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

G3: CHECK THE CIRCUIT BETWEEN THE RECIRCULATED AIR FLAP ACTUATOR AND THE EATC MODULE FOR SHORT TO VOLTAGE

VFE0038599

1 Ignition switch in position II.

☐ Measure the voltage between the EATC module, connector C366, pin 1, circuit 33-FA76 (YEIBU), wiring harness side and ground.

3 Measure the voltage between the EATC module, connector C366, pin 2, circuit 32-FA76 (WH/BU), wiring harness side and ground.

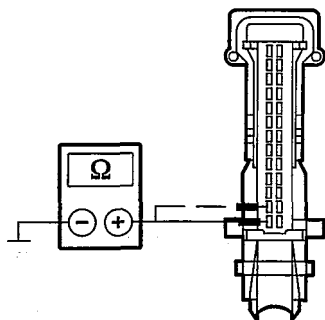
- Is a voltage measured during any of these measurements?

→ **Yes**

LOCATE and REPAIR the short to voltage in the relevant circuit between the recirculated air flap actuator and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to G4.

G4: CHECK THE CIRCUIT BETWEEN THE RECIRCULATED AIR FLAP ACTUATOR AND THE EATC MODULE FOR SHORT TO GROUND

VFE0038600

1 Ignition switch in position 0.

2 Measure the resistance between the EATC module, connector C366, pin 1, circuit 33-FA76 (YEIBU), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- 3 Measure the resistance between the EATC module, connector C366, pin 2, circuit 32-FA76 (WH/BU), wiring harness side and ground.
- Is a resistance greater than 10,000 ohms measured in both cases?
- **Yes**
CHECK the EATC module, if necessary
INSTALL a new one. CHECK the operation of the system.
- **No**
LOCATE and REPAIR the short in the relevant circuit between the recirculated air flap actuator and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

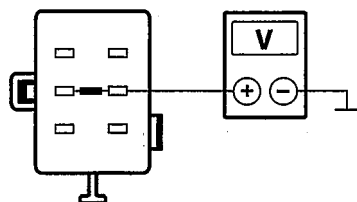
PINPOINT TEST H : MALFUNCTION OF AIR DISTRIBUTION FLAP - VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

NOTE: Ensure that the air distribution flap is mechanically OK.

H1: CHECK VOLTAGE AT AIR DISTRIBUTION FLAP ACTUATOR



VFE0030336

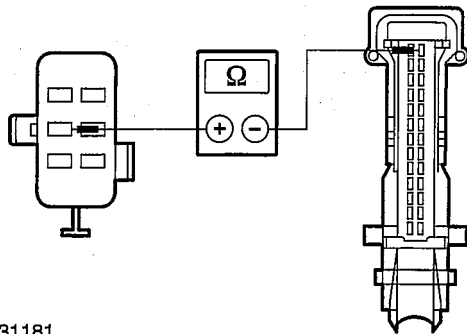
- ☐ Ignition switch in position 0.
- 2 Disconnect connector C368 from air distribution flap actuator.
- 3 Ignition switch in position II.
- 4 Measure the voltage between the air distribution flap actuator, connector C368, pin 2, circuit 15-FBI9 (GNNE), wiring harness side and ground.
- Is battery voltage measured?
- **Yes**
GO to H3.
- **No**
GO to H2.

H2: CHECK THE CIRCUIT BETWEEN THE AIR DISTRIBUTION FLAP ACTUATOR AND THE EATC MODULE FOR OPEN CIRCUIT

- ☐ Ignition switch in position 0.
- ☐ Disconnect Connector C366 from EATC module.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E0031181

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the EATC module, connector C366, pin 26, circuit 15-FBI9 (GNNE), wiring harness side and the air distribution flap actuator, connector C368, pin 2, circuit 15-FBI9 (GNNE), wiring harness side.

• Is a resistance of less than 2 ohms registered?

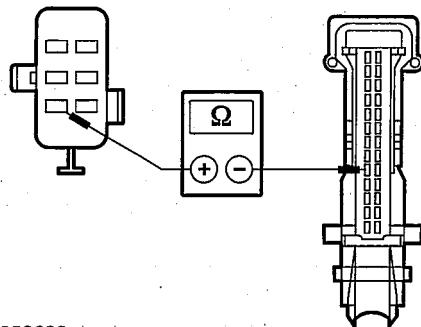
→ **Yes**

CHECK the EATC module, if necessary
INSTALL a new one. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in circuit 15-FB19 (GNNE) between the EATC module and the air distribution flap actuator using the Wiring Diagrams. CHECK the operation of the system.

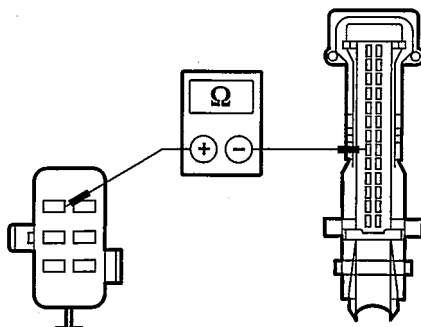
H3: CHECK THE CIRCUITS BETWEEN THE AIR DISTRIBUTION FLAP ACTUATOR AND THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE FOR OPEN CIRCUIT



VFE0038603

- 1 Ignition switch in position 0.
- 2 Disconnect Connector C366 from EATC module.

- 3 Measure the resistance between the air distribution flap actuator, connector C368, pin 1, circuit 31S-FB20 (BWBU), wiring harness side and the EATC module, connector C366, pin 5, circuit 31S-FB20 (BWBU), wiring harness side.



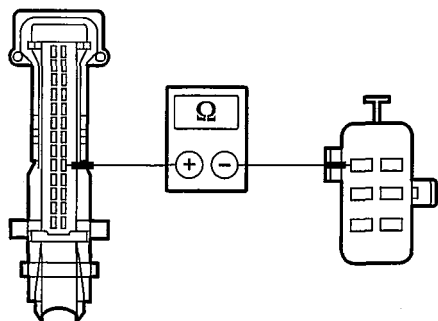
VFE0038604

- ☐ Measure the resistance between the air distribution flap actuator, connector C368, pin 3, circuit 31S-FB21 (BWOOG), wiring harness side and the EATC module, connector C366, pin 6, circuit 31S-FB21 (BWOOG), wiring harness side.

DIAGNOSIS AND TESTING

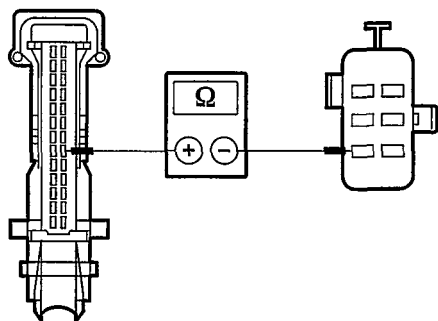
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



VFE0038605

- 5** Measure the resistance between the air distribution flap actuator, connector C368, pin 4, circuit 31S-FB22 (BWGN), wiring harness side and the EATC module, connector C366, pin 18, circuit 31S-FB22 (BWGN), wiring harness side.



VFE0038606

- 6** Measure the resistance between the air distribution flap actuator, connector C368, pin 6, circuit 31S-FB23 (BWRD), wiring harness side and the EATC module, connector C366, pin 19, circuit 31S-FB23 (BWRD), wiring harness side.

- Is a resistance of less than 2 ohms measured in all of the cases?

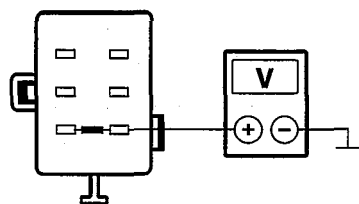
→ **Yes**

GO to H4.

→ **No**

LOCATE and REPAIR the break in the relevant circuit between the air distribution flap actuator and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

H4: CHECK THE CIRCUITS BETWEEN THE AIR DISTRIBUTION FLAP ACTUATOR AND THE EATC MODULE FOR SHORT TO VOLTAGE



VFE0030395

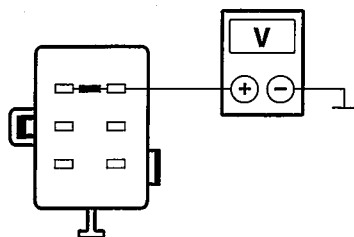
- 1** Ignition switch in position II.

- ☐ Measure the voltage between the air distribution flap actuator, connector C368, pin 1, circuit 31S-FB20 (BWBU), wiring harness side and ground.

DIAGNOSIS AND TESTING

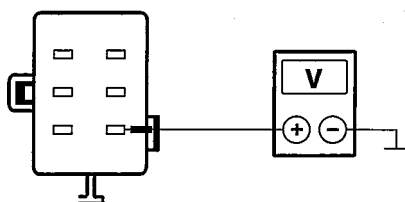
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



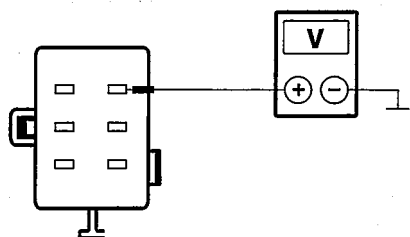
VFE0030396

- 3 Measure the voltage between the air distribution flap actuator, connector C368, pin 3, circuit 31S-FB21 (BWOOG), wiring harness side and ground.



VFE0030397

- 4 Measure the voltage between the air distribution flap actuator, connector C368, pin 4, circuit 31S-FB22 (BWGN), wiring harness side and ground.



VFE0030398

- 5 Measure the voltage between the air distribution flap actuator, connector C368, pin 6, circuit 31S-FB23 (BWRD), wiring harness side and ground.

- Is a voltage measured during any of these measurements?

→ **Yes**

LOCATE and REPAIR the short to voltage in the relevant circuit between the air distribution flap actuator and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

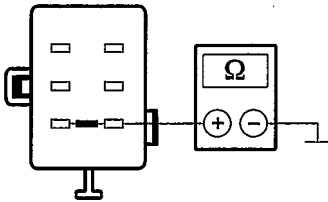
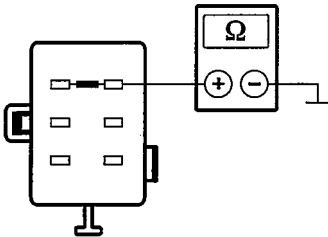
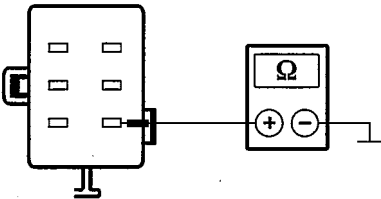
→ **No**

GO to H5.

H5: CHECK THE CIRCUITS BETWEEN THE AIR DISTRIBUTION FLAP ACTUATOR AND THE EATC MODULE FOR SHORT TO GROUND

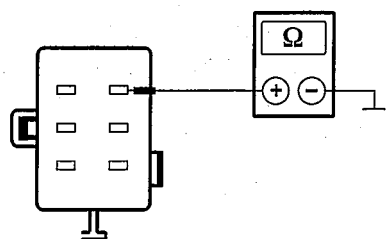
- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<div><p>VFE0030399</p></div>	<div><input type="checkbox"/> Measure the resistance between the air distribution flap actuator, connector C368, pin 1, circuit 31S-FB20 (BWBU), wiring harness side and ground.</div>
<div><p>VFE0030443</p></div>	<div><div>3</div> Measure the resistance between the air distribution flap actuator, connector C368, pin 3, circuit 31S-FB21 (BWOOG), wiring harness side and ground.</div>
<div><p>VFE0030444</p></div>	<div><div>4</div> Measure the resistance between the air distribution flap actuator, connector C368, pin 4, circuit 31S-FB22 (BWGN), wiring harness side and ground.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0030445

DETAILS/RESULTS/ACTIONS

- 5 Measure the resistance between the air distribution flap actuator, connector C368, pin 6, circuit 31S-FB23 (BWRD), wiring harness side and ground.

- Is a resistance of more than 10,000 ohms measured in all of the measurements?

→ **Yes**

CHECK the air distribution flap for ease of movement and proper function. If the air distribution flap is OK, RENEW the air distribution flap actuator. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the short in the relevant circuit between the air distribution flap actuator and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST I : MALFUNCTION OF TEMPERATURE CONTROL FLAP - VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

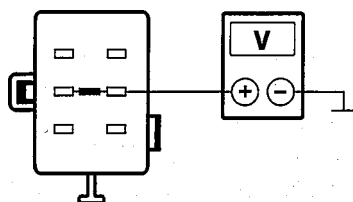
NOTE: Ensure that the temperature control flap is mechanically OK.

I1: CHECK VOLTAGE AT TEMPERATURE CONTROL FLAP ACTUATOR

- ☐ Ignition switch in position 0.

- 2 Disconnect Connector C369 from air temperature control flap actuator.

- 3 Ignition switch in position II.



VFE0030336

- 4 Measure the voltage between the temperature control flap actuator, connector C369, pin 2, circuit 15-FB9 (GN/RD), wiring harness side and ground.

- Is battery voltage measured?

→ **Yes**

GO to 13

→ **No**

GO to 12

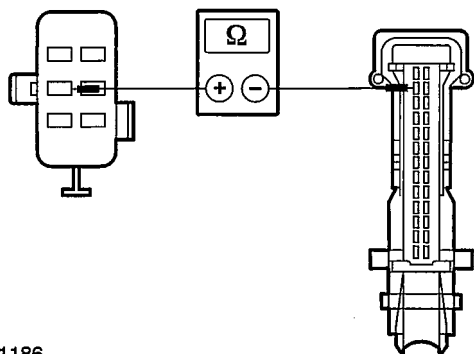
I2: CHECK THE CIRCUIT BETWEEN THE TEMPERATURE CONTROL FLAP ACTUATOR AND THE EATC MODULE FOR OPEN CIRCUIT

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



E0031186

2 Disconnect Connector C366 from EATC module.

Measure the resistance between the EATC module, connector C366, pin 12, circuit 15-FB9 (GN/rd), wiring harness side and the temperature control flap actuator, connector C369, pin 2, circuit 15-FB9 (GNIRD), wiring harness side.

• Is a resistance of less than 2 ohms registered?

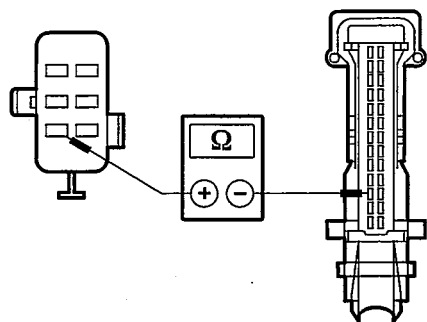
→ **Yes**

CHECK the EATC module, if necessary
INSTALL a new one. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in circuit 15-FB9 (GNIRD) between the EATC module and the temperature control flap actuator using the Wiring Diagrams. CHECK the operation of the system.

13: CHECK THE CIRCUITS BETWEEN THE TEMPERATURE CONTROL FLAP ACTUATOR AND THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE FOR OPEN CIRCUIT

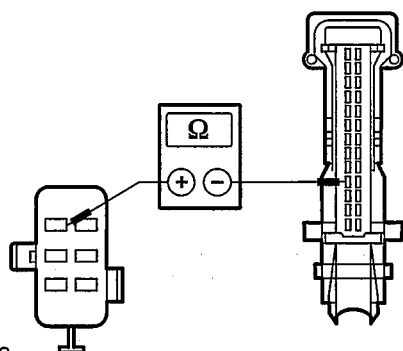


VFE0038607

1 Ignition switch in position 0.

2 Disconnect Connector C366 from EATC module.

3 Measure the resistance between the temperature control flap actuator, connector C369, pin 1, circuit 31S-FBI0 (BWGN), wiring harness side and the EATC module, connector C366, pin 3, circuit 31S-FBI0 (BK/GN), wiring harness side.

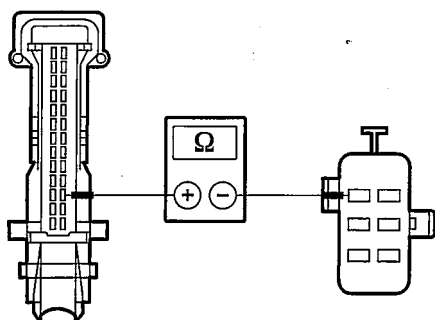


VFE0038608

4 Measure the resistance between the temperature control flap actuator, connector C369, pin 3, circuit 31S-FB11 (BWRD), wiring harness side and the EATC module, connector C366, pin 4, circuit 31S-FB11 (BWRD), wiring harness side.

DIAGNOSIS AND TESTING

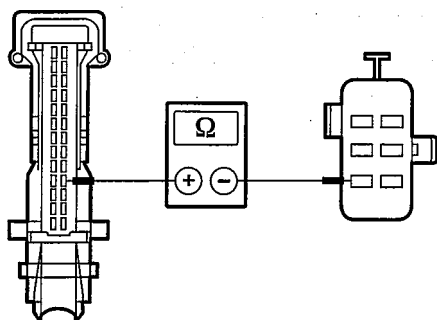
TEST CONDITIONS



VFE0038609

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the temperature control flap actuator, connector C369, pin 4, circuit 31S-FB12 (BW/WH), wiring harness side and the EATC module, connector C366, pin 16, circuit 31S-FBI2 (BK/WH), wiring harness side.



VFE0038610

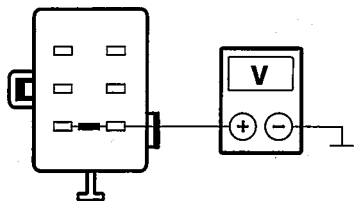
Measure the resistance between the temperature control flap actuator, connector C369, pin 6, circuit 31S-FB13 (BK/YE), wiring harness side and the EATC module, connector C366, pin 17, circuit 31S-FBI3 (BK/YE), wiring harness side.

- Is a resistance of less than 2 ohms measured in all of the cases?

→ **Yes**
GO to 14.

→ **No**
LOCATE and REPAIR the break in the relevant circuit between the temperature control flap actuator and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

14: CHECK THE CIRCUITS BETWEEN THE TEMPERATURE CONTROL FLAP ACTUATOR AND THE EATC MODULE FOR SHORT TO VOLTAGE



VFE0030395

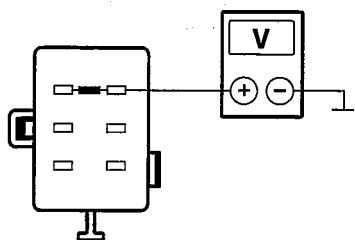
- 1** Ignition switch in position II.

Measure the voltage between the air temperature control flap actuator, connector C369, pin 1, circuit 31S-FBI0 (BWGN), wiring harness side and ground.

DIAGNOSIS AND TESTING

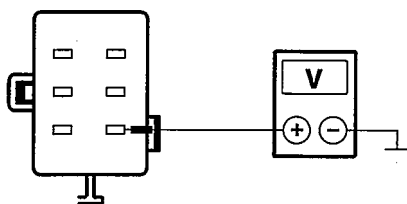
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



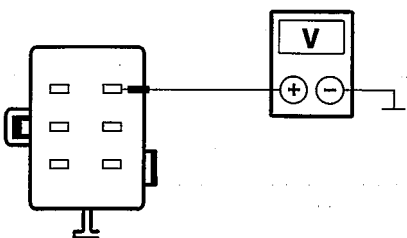
VFE0030396

- 3 Measure the voltage between the air temperature control flap actuator, connector C369, pin 3, circuit 31s-FB11 (BWRD), wiring harness side and ground.



VFE0030397

- 4 Measure the voltage between the air temperature control flap actuator, connector C369, pin 4, circuit 31S-FB12 (BK/WH), wiring harness side and ground.



VFE0030398

- 5 Measure the voltage between the air temperature control flap actuator, connector C369, pin 6, circuit 31S-FB13 (BK/YE), wiring harness side and ground.

- Is a voltage measured during any of these measurements?

→ **Yes**

LOCATE and REPAIR the short to voltage in the relevant circuit between the temperature control flap actuator and the EATC module using the Wiring Diagrams. CHECK operation of system.

→ **No**

GO to I5.

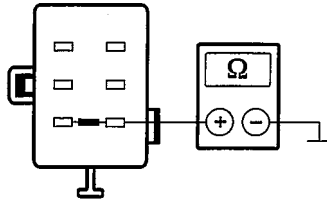
15: CHECK THE CIRCUITS BETWEEN THE TEMPERATURE CONTROL FLAP ACTUATOR AND THE EATC MODULE FOR SHORT TO GROUND

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

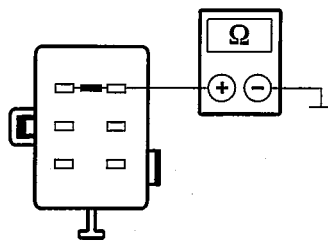
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



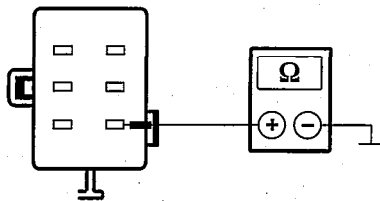
VFE0030399

- 2 Measure the resistance between the air temperature control flap actuator, connector C369, pin 1, circuit 31S-FB10 (BWGN), wiring harness side and ground.



VFE0030443

- 3 Measure the resistance between the air temperature control flap actuator, connector C369, pin 3, circuit 31S-FB11 (BWRD), wiring harness side and ground.

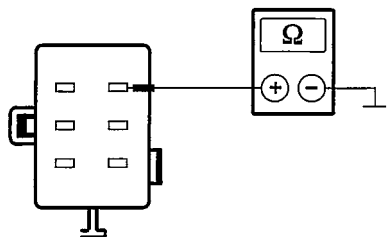


VFE0030444

- 4 Measure the resistance between the air temperature control flap actuator, connector C369, pin 4, circuit 31S-FB12 (BK/WH), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0030445

DETAILS/RESULTS/ACTIONS

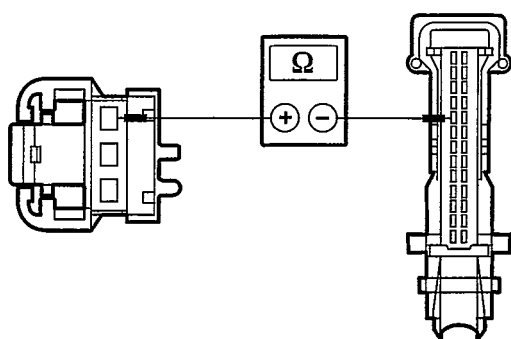
- ☐ Measure the resistance between the air temperature control flap actuator, connector C369, pin 6, circuit 31S-FB13 (BK/YE), wiring harness side and ground.
- Is a resistance of more than 10,000 ohms measured in all of the measurements?
- **Yes**
RENEW the temperature control flap actuator. CHECK the operation of the system.
- **No**
LOCATE and REPAIR the short to ground in the relevant circuit between the temperature control flap actuator and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST J : FAULT IN FOOTWELL AIR OUTLET TEMPERATURE SENSOR CIRCUIT - VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

J1: CHECK THE CIRCUIT BETWEEN THE FOOTWELL AIR OUTLET TEMPERATURE SENSOR AND THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE FOR OPEN CIRCUIT

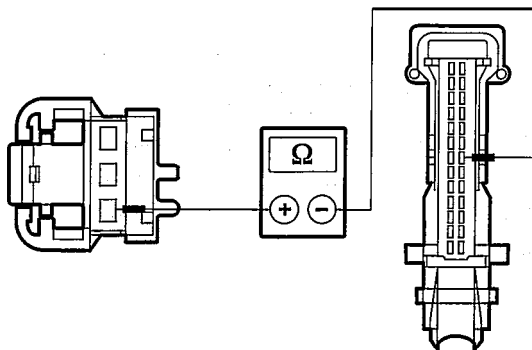


E64256

- ☐ Ignition switch in position 0.
- ☐ Disconnect Connector C367 from EATC module.
- 3** ☐ Disconnect Connector C363 from footwell air outlet temperature sensor.
- ☐ Measure the resistance between the footwell air outlet temperature sensor, connector C363, pin 1, circuit 8-FA97 (WH/BU), wiring harness side and the EATC module, connector C367, pin 9, circuit 8-FA97 (WH/BU), wiring harness side.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E64257

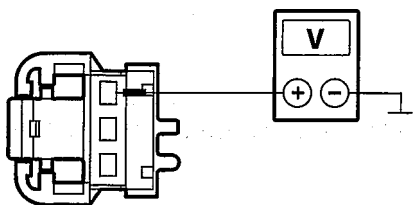
DETAILS/RESULTS/ACTIONS

- 5 Measure the resistance between the footwell outlet temperature sensor, connector C363, pin 3, circuit 9-FA97 (BNIBU), wiring harness side and the EATC module, connector C367, pin 20, circuit 9-FA48A (BN/GN), wiring harness side.

- Is a resistance of less than 2 ohms measured in both cases?

→ **Yes**
GO to J2.

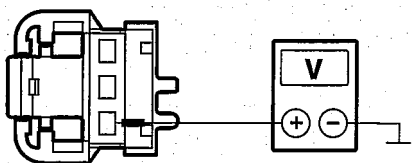
→ **No**
LOCATE and REPAIR the break in the relevant circuit between the footwell air outlet temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

J2: CHECK THE CIRCUIT BETWEEN THE FOOTWELL AIR OUTLET TEMPERATURE SENSOR AND THE EATC MODULE FOR SHORT TO VOLTAGE


E64258

- 1 Ignition switch in position II.

- 2 Measure the voltage between the footwell air outlet temperature sensor, connector C363, pin 1, circuit 8-FA97 (WH/BU), wiring harness side and ground.



E64259

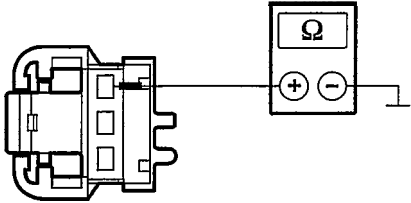
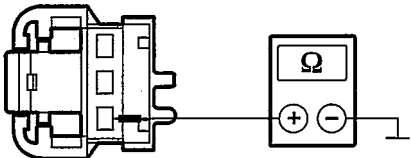
- 3 Measure the voltage between the footwell air outlet temperature sensor, connector C363, pin 3, circuit 9-FA97 (BN/BU), wiring harness side and ground.

- Is a voltage measured during any of these measurements?

→ **Yes**
LOCATE and REPAIR the short to voltage in the relevant circuit between the footwell air outlet temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

→ **No**
GO to J3.

DIAGNOSIS AND TESTING

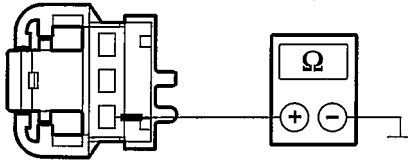
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J3: CHECK THE CIRCUIT BETWEEN THE FOOTWELL AIR OUTLET TEMPERATURE SENSOR AND THE EATC MODULE FOR SHORT TO GROUND	
 <p>E64260</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the footwell air outlet temperature sensor, connector C363, pin 1, circuit 8-FA97 (WHIBU), wiring harness side and ground.</p>
 <p>E64261</p>	<p>3 Measure the resistance between the footwell air outlet temperature sensor, connector C363, pin 3, circuit 9-FA97 (BN/BU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 ohms measured in both cases? <p>→ Yes RENEW the footwell air outlet temperature sensor. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the short in the relevant circuit between the footwell air outlet temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST K : FAULT IN CENTER VENTS AIR OUTLET TEMPERATURE SENSOR CIRCUIT - VEHICLES **WITH** ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
KI: CHECK THE GROUND CONNECTION OF THE CENTER VENTS AIR OUTLET TEMPERATURE SENSOR	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Connector C364 from center vents air outlet temperature sensor.</p>

DIAGNOSIS AND TESTING

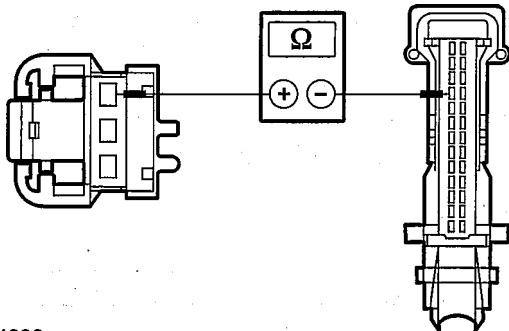
TEST CONDITIONS



E64261

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the center vents air outlet temperature sensor, connector C364, pin 3, circuit 9-FA96 (BNIRD), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
 - **Yes**
GO to K2.
 - **No**
LOCATE and REPAIR the break in circuit 9-FA96 (BNIRD) between the center vents air outlet temperature sensor and soldered connection S262 using the Wiring Diagrams. CHECK the operation of the system.

K2: CHECK THE CIRCUIT BETWEEN THE CENTER VENTS AIR OUTLET TEMPERATURE SENSOR AND THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE FOR OPEN CIRCUIT

E64262

- 1** Disconnect Connector C367 from EATC module.
- ☐ Measure the resistance between the center vents air outlet temperature sensor, connector C364, pin 1, circuit 8-FA96 (WHIRD), wiring harness side and the EATC module, connector C367, pin 10, circuit 8-FA96 (WHIRD), wiring harness side.
- Is a resistance of less than 2 ohms registered?
- **Yes**
GO to K3.
 - **No**
LOCATE and REPAIR the break in circuit 8-FA96 (WHIRD) between the center vents air outlet temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

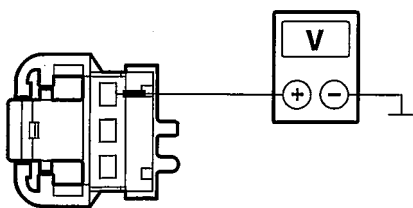
K3: CHECK THE CIRCUIT BETWEEN THE CENTER VENTS AIR OUTLET TEMPERATURE SENSOR AND THE EATC MODULE FOR SHORT TO VOLTAGE

- 1** Ignition switch in position II.

DIAGNOSIS AND TESTING

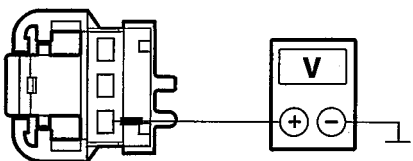
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



E64258

- 2** Measure the voltage between the center vents air outlet temperature sensor, connector C364, pin 1, circuit 8-FA96 (WH/RD), wiring harness side and ground.



E64259

- ☐ Measure the voltage between the center vents air outlet temperature sensor, connector C364, pin 3, circuit 9-FA96 (BN/RD), wiring harness side and ground.

- Is a voltage measured during any of these measurements?

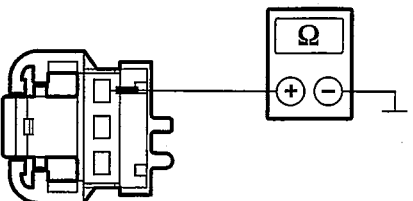
→ **Yes**

LOCATE and REPAIR the short to voltage in the relevant circuit between the center vents air outlet temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to K4.

K4: CHECK THE CIRCUIT BETWEEN THE CENTER VENTS AIR OUTLET TEMPERATURE SENSOR AND THE EATC MODULE FOR SHORT TO GROUND



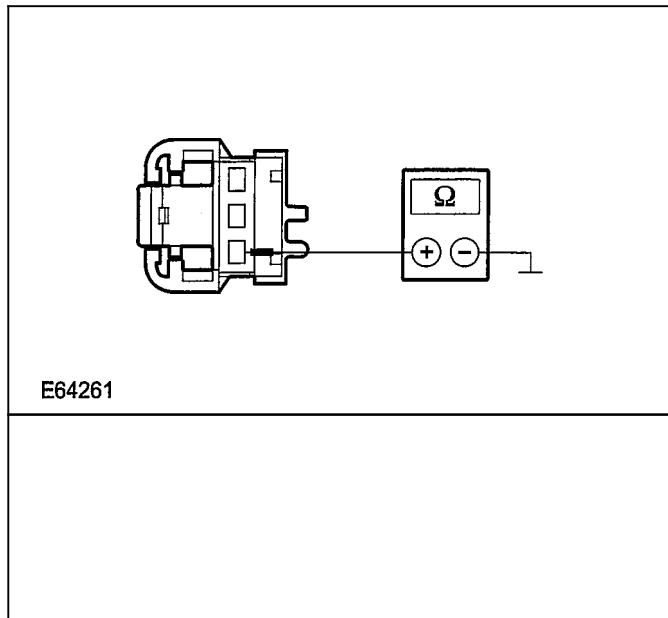
E64260

- 1** Ignition switch in position 0.

- 2** Measure the resistance between the center vents air outlet temperature sensor, connector C364, pin 1, circuit 8-FA96 (WH/RD), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

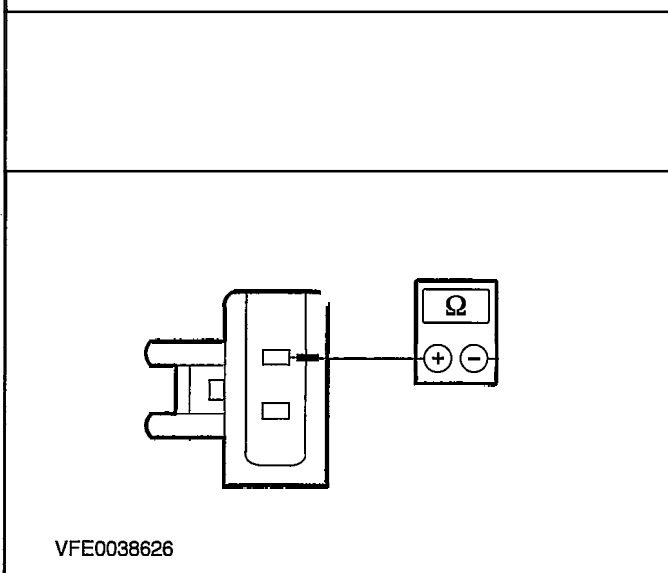
- ☐ Measure the resistance between the center vents air outlet temperature sensor, connector C364, pin 3, circuit 9-FA96 (BN/RD), wiring harness side and ground.
- Is a resistance greater than 10,000 ohms measured in both cases?
- **Yes**
RENEW the centre vents air outlet temperature sensor. CHECK the operation of the system.
- **No**
LOCATE and REPAIR the short in the relevant circuit between the center vents air outlet temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST L : SUN LOAD SENSOR CIRCUIT FAULTY - VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

L1: CHECK THE GROUND CONNECTION OF THE SUN LOAD SENSOR



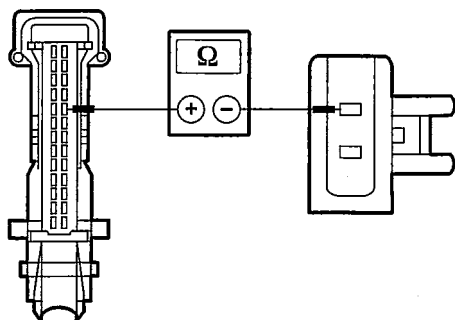
- 1 Ignition switch in position 0.
- ☐ Disconnect Connector C389 from sun load sensor.
- ☐ Measure the resistance between the sun load sensor, connector C389, pin 1, circuit 9-FA53 (BN/BU), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
- **Yes**
GO to L2.
- **No**
LOCATE and REPAIR the break in circuit 9-FA53 (BNIBU) between the sun load sensor and soldered connection S262 using the Wiring Diagrams: CHECK the operation of the system.

L2: CHECK THE CIRCUIT BETWEEN THE SUN LOAD SENSOR AND THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE FOR OPEN CIRCUIT

- 1 Disconnect Connector C367 from EATC module.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0038627

DETAILS/RESULTS/ACTIONS

- 2** Measure the resistance between the sun load sensor, connector C389, pin 2, circuit 8-FA53 (WHIBU), wiring harness side and the EATC module, connector C367, pin 22, circuit 8-FA53 (WHIBU), wiring harness side.

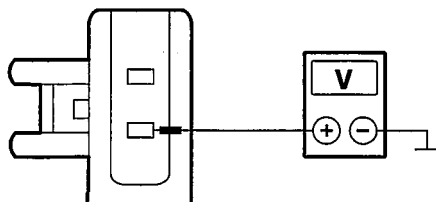
- Is a resistance of less than 2 ohms registered?

→ **Yes**

GO to L3.

→ **No**

LOCATE and REPAIR the break in circuit 8-FA53 (WHIBU) between the sun load sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

L3: CHECK THE CIRCUIT BETWEEN THE SUN LOAD SENSOR AND THE EATC MODULE FOR SHORT TO VOLTAGE


VFE0038628

- 1** Ignition switch in position II.

- ☐ Measure the voltage between the sun load sensor, connector C389, pin 2, circuit 8-FA53 (WHIBU), wiring harness side and ground.

- Is a voltage measured?

→ **Yes**

LOCATE and REPAIR the short to voltage supply in circuit 8-FA53 (WHIBU) between the sun load sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

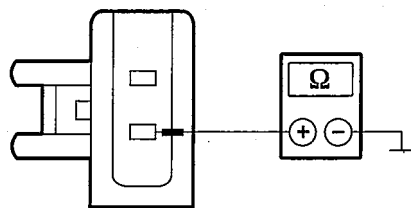
GO to L4.

L4: CHECK THE CIRCUIT BETWEEN THE SUN LOAD SENSOR AND THE EATC MODULE FOR SHORT TO GROUND

- 1** Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0038629

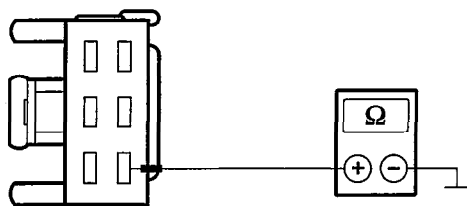
DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the sun load sensor, connector C389, pin 2, circuit 8-FA53 (WHIBU), wiring harness side and ground.
- Is a resistance of more than 10,000 ohms measured?
- **Yes**
INSTALL a new sun load sensor. CHECK the operation of the system.
- **No**
LOCATE and REPAIR the short in circuit 8-FA53 (WHIBU) between the sun load sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

**PINPOINT TEST M : FAULT IN PASSENGER COMPARTMENT TEMPERATURE SENSOR CIRCUIT
- VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)**

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

M1: CHECK GROUND CONNECTION OF PASSENGER COMPARTMENT TEMPERATURE SENSOR


VFE0024459

- 1 Ignition switch in position 0.
- ☐ Disconnect Connector C388 from passenger compartment temperature sensor.
- ☐ Measure the resistance between the passenger compartment temperature sensor, connector C388, pin 6, circuit 9-FA48 (BNIGN), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
- **Yes**
GO to M2.
- **No**
LOCATE and REPAIR the break in circuit 9-FA48 (BNIGN) between the passenger compartment temperature sensor and soldered connection S262 using the Wiring Diagrams. CHECK the operation of the system.

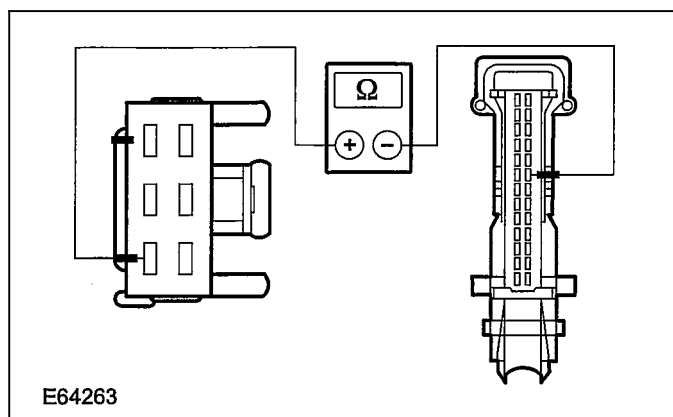
M2: CHECK THE CIRCUIT BETWEEN THE PASSENGER COMPARTMENT TEMPERATURE SENSOR AND THE ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE FOR OPEN CIRCUIT

- 1 Disconnect Connector C367 from EATC module.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



Measure the resistance between the passenger compartment temperature sensor, connector C388, pin 4, circuit 8-FA48 (WHIGN), wiring harness side and the EATC module, connector C367, pin 21, circuit 8-FA48 (WHIGN), wiring harness side.

Is a resistance of less than 2 ohms registered?

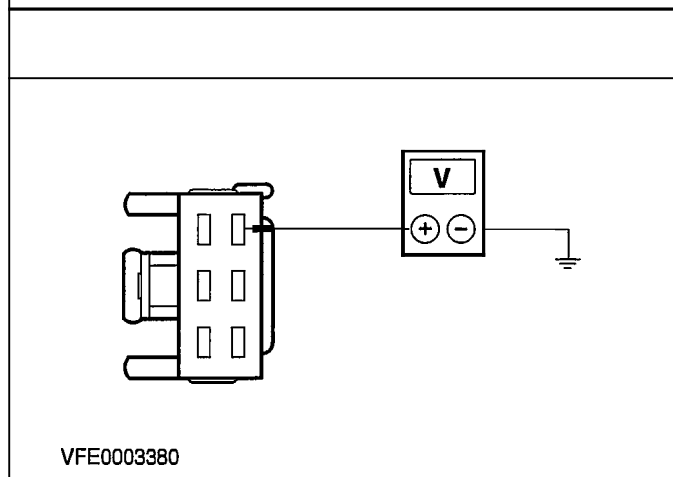
→ **Yes**

GO to M3.

→ **No**

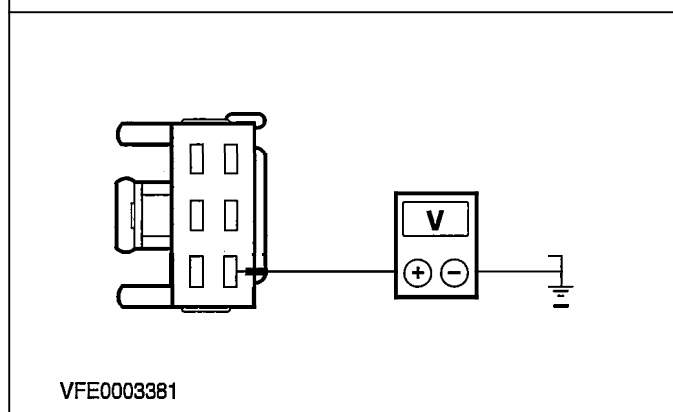
LOCATE and RECTIFY the open circuit in circuit 8-FA48 (WHIGN) between the passenger compartment temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

M3: CHECK THE CIRCUIT BETWEEN THE PASSENGER COMPARTMENT TEMPERATURE SENSOR AND THE EATC MODULE FOR SHORT TO VOLTAGE



☐ Ignition switch in position II.

☐ Measure the voltage between the passenger compartment temperature sensor, connector C388, pin 4, circuit 8-FA48 (WHIGN), wiring harness side and ground.



Measure the voltage between the passenger compartment temperature sensor, connector C388, pin 6, circuit 9-FA48 (BN/GN), wiring harness side and ground.

- Is a voltage measured during any of these measurements?

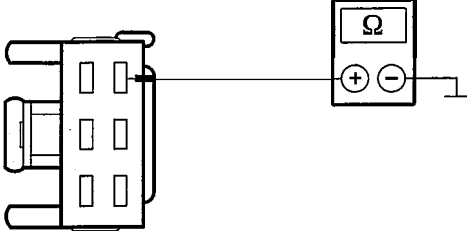
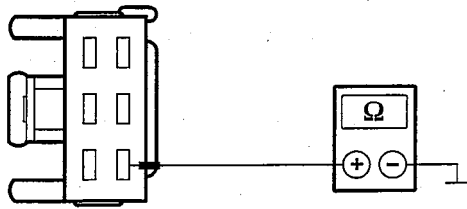
→ **Yes**

LOCATE and RECTIFY the short to voltage supply in the relevant circuit between the passenger compartment temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to M4.

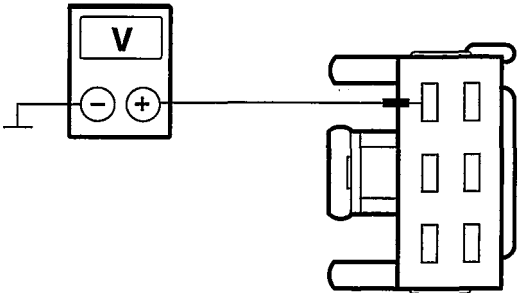
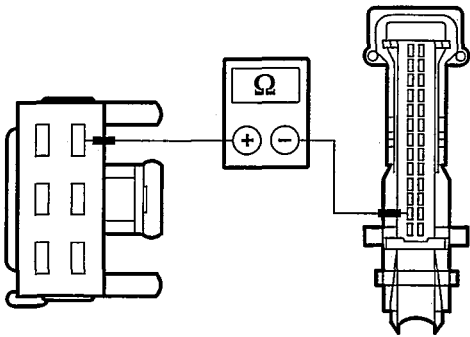
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
M4: CHECK THE CIRCUIT BETWEEN THE PASSENGER COMPARTMENT TEMPERATURE SENSOR AND THE EATC MODULE FOR SHORT TO GROUND	
 <p>VFE0024122</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the passenger compartment temperature sensor, connector C388, pin 4, circuit 8-FA48 (WHIGN), wiring harness side and ground.</p>
 <p>VFE0024459</p>	<p>3 Measure the resistance between the passenger compartment temperature sensor, connector C388, pin 6, circuit 9-FA48 (BN/GN), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 ohms measured in both cases? <p>→ Yes INSTALL A NEW passenger compartment temperature sensor. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the short circuit in the affected circuit between the passenger compartment temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST N : FAULT IN PASSENGER COMPARTMENT TEMPERATURE SENSOR BLOWER CIRCUIT - VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

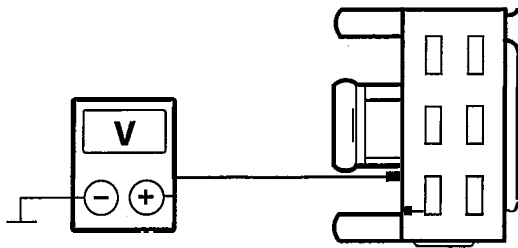
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
NI: CHECK THE VOLTAGE AT THE PASSENGER COMPARTMENT TEMPERATURE SENSOR	
	Ignition switch in position 0.
	2 Disconnect Connector C388 from passenger compartment temperature sensor.
	<input type="checkbox"/> Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0029210</p>	<p><input type="checkbox"/> Measure the voltage between the passenger compartment temperature sensor, connector C388, pin 1, circuit 15-FA48 (GN/BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to N2.</p> <p>→ No LOCATE and REPAIR the break in circuit 15-FA48 (GNIBK) between the passenger compartment temperature sensor and soldered connection S262 using the Wiring Diagrams. CHECK the operation of the system.</p>
N2: CHECK THE CIRCUIT BETWEEN THE PASSENGER COMPARTMENT TEMPERATURE SENSOR AND THE EATC MODULE FOR OPEN CIRCUIT	
 <p>E64264</p>	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Connector C367 from EATC module.</p> <p>3 Measure the resistance between the passenger compartment temperature sensor, connector C388, pin 3, circuit 31s-FA48 (BWGN), wiring harness side and the EATC module, connector C367, pin 2, circuit 31s-FA48 (BWGN), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes GO to N3.</p> <p>→ No LOCATE and RECTIFY the open circuit in circuit 31S-FA48 (BWGN) between the passenger compartment temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.</p>
N3: CHECK THE CIRCUIT BETWEEN THE PASSENGER COMPARTMENT TEMPERATURE SENSOR AND THE EATC MODULE FOR SHORT TO VOLTAGE	
	<p>1 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0029206

DETAILS/RESULTS/ACTIONS

- 2 Measure the voltage between the passenger compartment temperature sensor, connector C388, pin 3, circuit 31s-FA48 (BWGN), wiring harness side and ground.

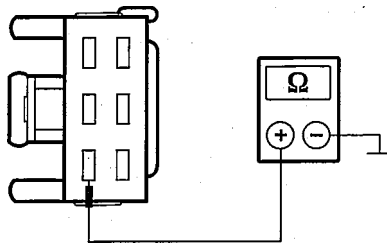
• Is a voltage measured?

→ **Yes**

LOCATE and RECTIFY the short to voltage supply in circuit 31s-FA48 (BWGN) between the passenger compartment temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

→ **No**
GO to N4.

N4: CHECK THE CIRCUIT BETWEEN THE PASSENGER COMPARTMENT TEMPERATURE SENSOR AND THE EATC MODULE FOR SHORT TO GROUND



VFE0036131

- 1 Ignition switch in position 0.

- Measure the resistance between the passenger compartment temperature sensor, connector C388, pin 3, circuit 31s-FA48 (BWGN), wiring harness side and ground.

• Is a resistance of more than 10,000 ohms measured?

→ **Yes**

INSTALL A NEW passenger compartment temperature sensor. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the short circuit in circuit 31S-FA48 (BWGN) between the passenger compartment temperature sensor and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST O : ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE INOPERATIVE (NO DISPLAY ON THE CONTROL UNIT)

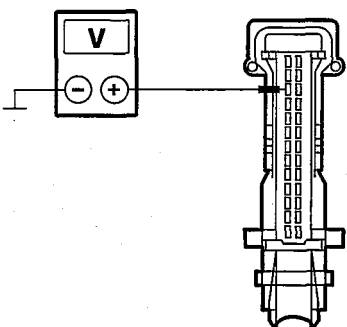
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

O1: CHECK FUSE F4

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

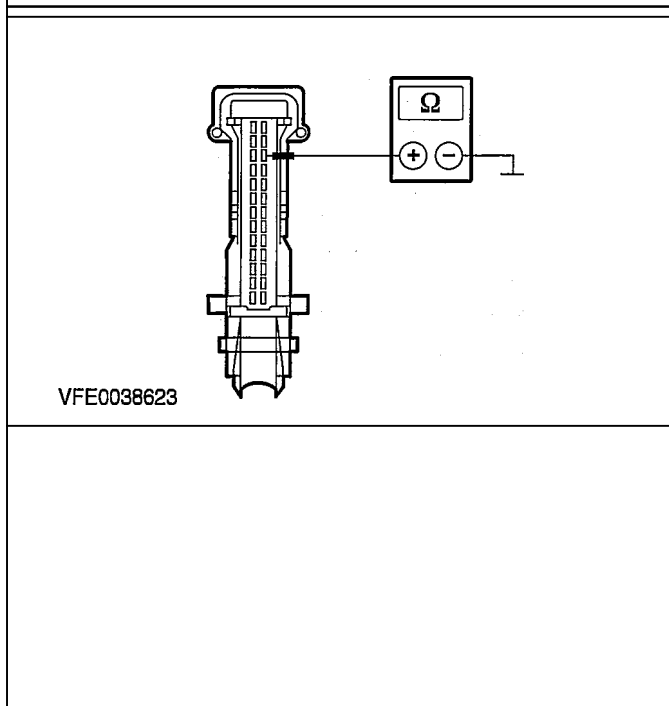
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>2 CHECK fuse F4 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to 02.</p> <p>→ No RENEW fuse F4 (10 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
02: CHECK THE VOLTAGE AT FUSE F4	
	<p>Disconnect fuse F4 (CJB).</p> <p>2 Measure the voltage between fuse F4 (10 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to 03.</p> <p>→ No REPAIR the voltage supply to fuse F4 using the Wiring Diagrams. CHECK the operation of the system.</p>
03: CHECK VOLTAGE AT ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE	
 <p>VFE0038621</p>	<p>1 Disconnect Connector C366 from EATC module.</p> <p>2 Measure the voltage between the EATC module, connector C366, pin 11, circuit 29-FA43 (OGIWH), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to 04.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F4 and the EATC module using the Wiring Diagrams. CHECK operation of system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

04: CHECK THE GROUND CONNECTION OF THE EATC MODULE



- 1 Measure the resistance between the EATC module, connector C366, pin 24, circuit 31-FA43 (BK), wiring harness side and ground.

- Is a resistance of less than 2 ohms registered?

→ Yes

CHECK connection between EATC module and CAN bus.

REFER to: Kommunikations-Netzwerk-gebaut ab 0812005 (418-00, Diagnosis and Testing).

If the connection with CAN bus is OK - RENEW the EATC module. CHECK the operation of the system.

→ No

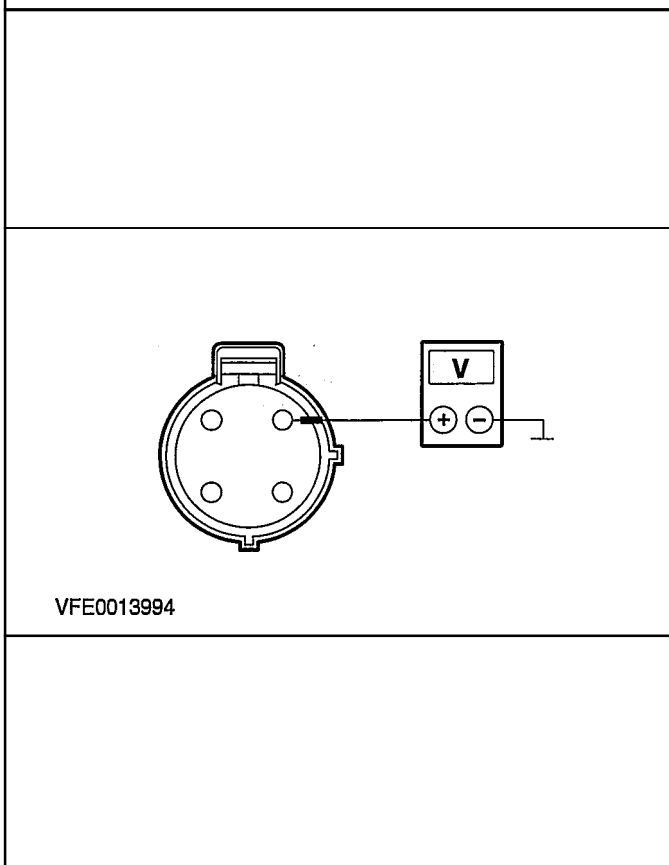
LOCATE and RECTIFY the break in the circuit between the EATC module and ground connection G12 using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST P : CIRCUIT OF A/C DEMAND SIGNAL SHORT CIRCUIT TO VOLTAGE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

P1: CHECK CIRCUIT BETWEEN REFRIGERANT LOW-PRESSURE SWITCH AND EATC MODULE FOR SHORT TO VOLTAGE



- 1 Ignition switch in position 0.

- 2 Disconnect Connector C402 from the refrigerant low-pressure switch.

- 3 Ignition switch in position II.

- 4 Measure the voltage between the refrigerant low-pressure switch, connector 402, pin 1, circuit 31S-FA17 (BWRD), wiring harness side and ground.

- Is a voltage measured?

→ Yes

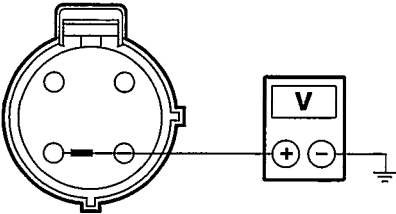
LOCATE and REPAIR short to voltage in circuit 31S-FA17 (BWRD) between the refrigerant low-pressure switch and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

→ No

- Vehicles with 2.0L Duratec-HE (MI4) engine: GO to P6.

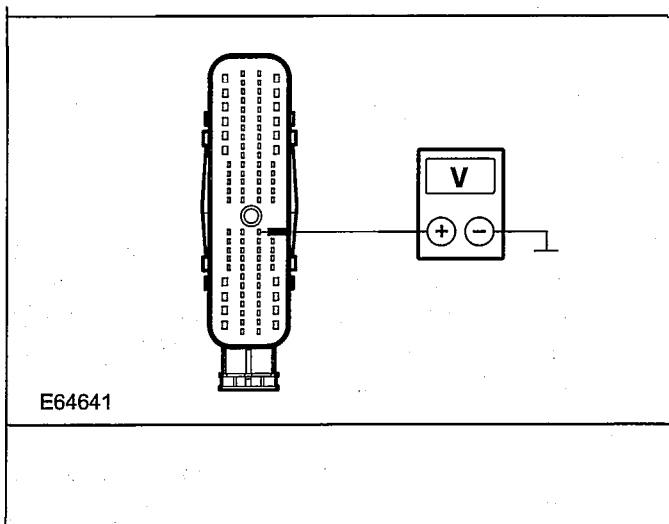
- All, except vehicles with 2.0L Duratec-HE (MI4) engine: GO to P2.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
P2: CHECK CIRCUIT BETWEEN REFRIGERANT LOW-PRESSURE SWITCH AND REFRIGERANT HIGH-PRESSURE SWITCH FOR SHORT TO VOLTAGE	
	1 Ignition switch in position 0.
	2 Disconnect Connector C405 from the refrigerant high-pressure switch.
	3 Ignition switch in position II.
 <p>E0011398</p>	<p>4 Measure the voltage between the refrigerant low-pressure switch, connector 402, pin 4, circuit 31S-FA17A (BWRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a voltage measured? → Yes LOCATE and REPAIR short to voltage in circuit 31S-FA17A (BWRD) between the refrigerant low-pressure switch and the refrigerant high-pressure switch using the Wiring Diagrams. CHECK the operation of the system. → No <ul style="list-style-type: none"> -All, except vehicles with diesel engine or 2.0L Duratec-HE (MI4) engine: GO to P3. - Vehicles with 1.4L diesel engine: GO to P4. - Vehicles with 1.6L diesel engine: GO to P5.
P3: CHECK CIRCUIT BETWEEN THE POWERTRAIN CONTROL MODULE (PCM) AND THE REFRIGERANT HIGH-PRESSURE SWITCH FOR SHORT TO VOLTAGE - ALL, EXCEPT VEHICLES WITH DIESEL ENGINE OR 2.0L DURATEC-HE (MI4) ENGINE	
	1 Ignition switch in position 0.
	2 Disconnect connector C343 from the PCM.
	3 Ignition switch in position II.

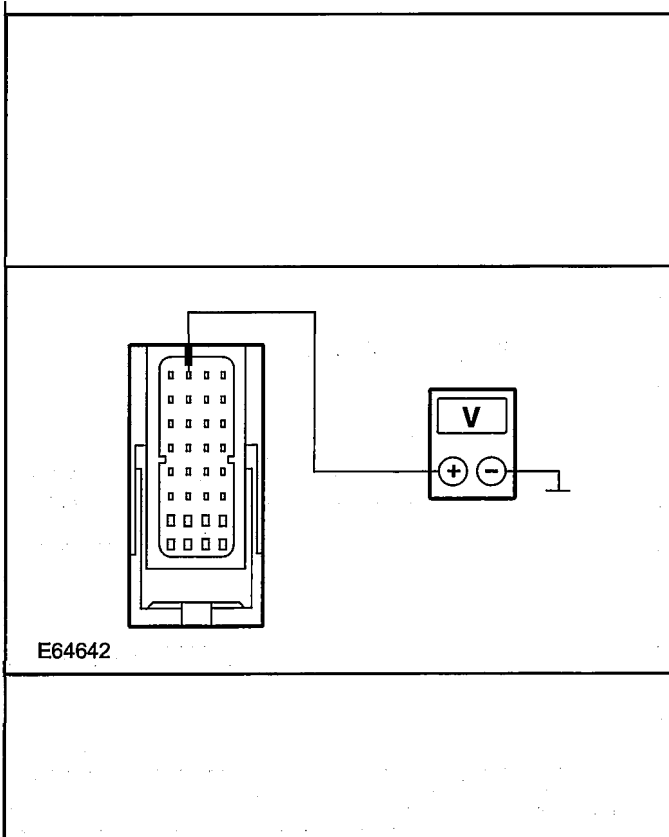
DIAGNOSIS AND TESTING

TEST CONDITIONS

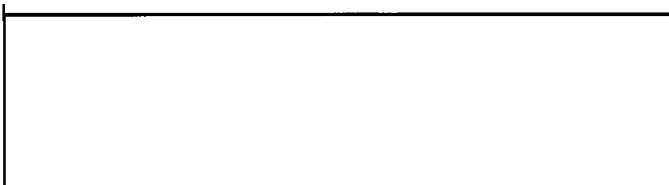


DETAILS/RESULTS/ACTIONS

- 4 Measure the voltage between the PCM, connector C343, pin F22, circuit 31S-FA87 (BWGN), wiring harness side and ground.
 - Is a voltage measured?
 - **Yes**
LOCATE and RECTIFY the short to voltage in circuit 31S-FA87 (BWGN) between the refrigerant high-pressure switch and the PCM using the Wiring Diagrams. CHECK the operation of the system.
 - **No**
CHECK the PCM and RENEW if necessary. CHECK the operation of the system.

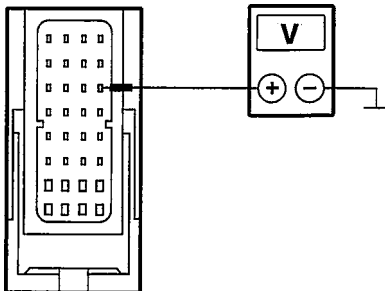
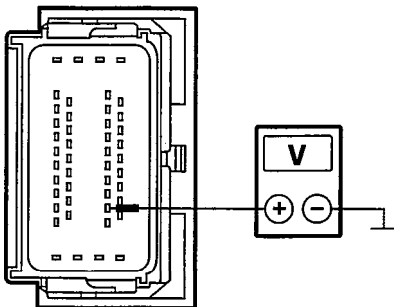
P4: CHECK CIRCUIT BETWEEN THE POWERTRAIN CONTROL MODULE (PCM) AND THE REFRIGERANT HIGH-PRESSURE SWITCH FOR SHORT TO VOLTAGE - VEHICLES WITH 1.4L DIESEL ENGINE


- 1 Ignition switch in position 0.
- 2 Disconnect Connector C370 (vehicles with electronic exhaust gas recirculation valve (EGR): C375) from PCM.
- 3 Ignition switch in position II.
- 4 Measure voltage between the PCM, connector C370 (vehicles with electronic exhaust gas recirculation valve (EGR): C375), pin A2, circuit 31S-FA87 (BWGN), wiring harness side and ground.
 - Is a voltage measured?
 - **Yes**
LOCATE and RECTIFY the short to voltage in circuit 31S-FA87 (BWGN) between the refrigerant high-pressure switch and the PCM using the Wiring Diagrams. CHECK the operation of the system.
 - **No**
CHECK the PCM and RENEW if necessary. CHECK the operation of the system.

P5: CHECK CIRCUIT BETWEEN THE POWERTRAIN CONTROL MODULE (PCM) AND THE REFRIGERANT HIGH-PRESSURE SWITCH FOR SHORT TO VOLTAGE - VEHICLES WITH 1.6L DIESEL ENGINE


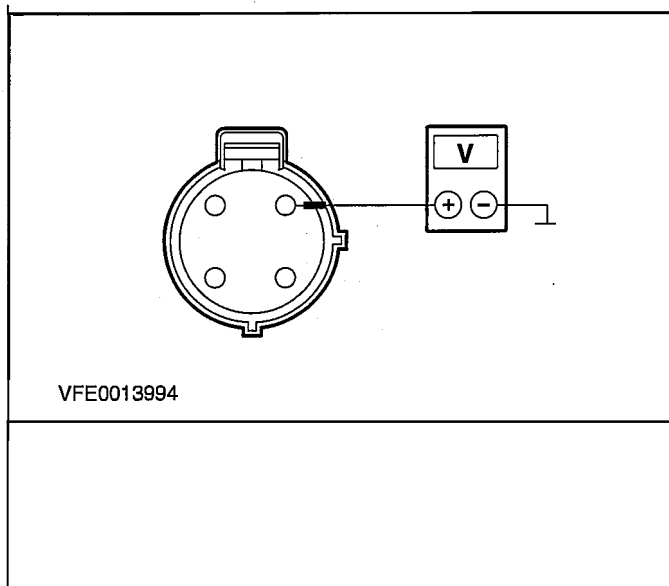
- 1 Ignition switch in position 0.
- 2 Disconnect connector C384 from the PCM.
- 3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS/RESULTS/ACTIONS	
<div></div> <div>E64643</div>		<div>4</div> Measure the voltage between the PCM, connector C384, pin C4, circuit 31S-FA87 (BWGN), wiring harness side and ground. <ul style="list-style-type: none">Is a voltage measured? <div>→ Yes LOCATE and RECTIFY the short to voltage in circuit 31s-FA87 (BWGN) between the refrigerant high-pressure switch and the PCM using the Wiring Diagrams. CHECK the operation of the system.</div> <div>→ No CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</div>	
P6: CHECK CIRCUIT BETWEEN THE POWERTRAIN CONTROL MODULE (PCM) AND THE REFRIGERANT LOW-PRESSURE SWITCH FOR SHORT TO VOLTAGE - VEHICLES WITH 2.0L DURATEC-HE (MI4) ENGINE			
		<div>1</div> Ignition switch in position 0. <div>Disconnect connector C380 from the PCM.</div>	
		<div>4</div> Ignition switch in position II.	
<div></div> <div>E64644</div>		<div>4</div> Measure the voltage between the PCM, connector C380, pin 14, circuit 31S-FA17A (BWRD), wiring harness side and ground. <ul style="list-style-type: none">Is a voltage measured? <div>→ Yes LOCATE and REPAIR short to voltage in circuit 31S-FA17A (BWRD) between the refrigerant low-pressure switch and the PCM using the Wiring Diagrams. CHECK the operation of the system.</div> <div>→ No CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</div>	
P7: CHECK THE EATC MODULE			
		Ignition switch in position 0.	
		Disconnect Connector C366 from EATC module.	
		Ignition switch in position II.	

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 4 Measure the voltage between the refrigerant low-pressure switch, connector 402, pin 1, circuit 31S-FA17 (BWRD), wiring harness side and ground.

- Is a voltage measured?

→ Yes

LOCATE and REPAIR short to voltage in circuit 31S-FA17 (BWRD) between the refrigerant low-pressure switch and the EATC module using the Wiring Diagrams. CHECK the operation of the system.

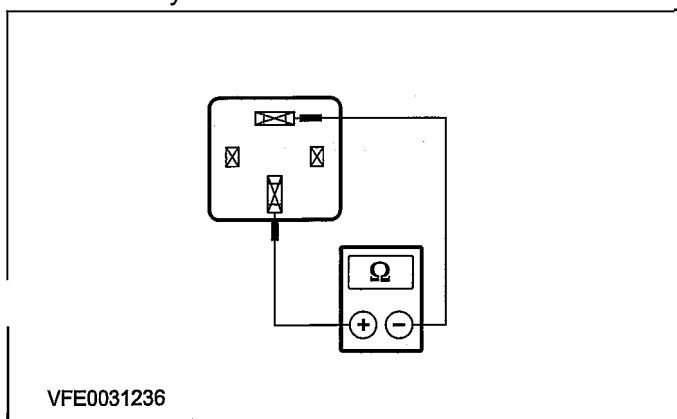
→ No

CHECK the EATC module, if necessary INSTALL a new one. CHECK the operation of the system.

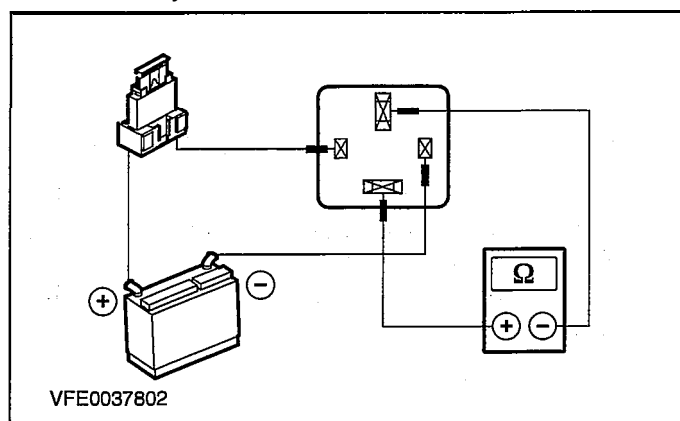
Component Tests

Air conditioning clutch relay

1. Check the normally open contact in the unswitched state:
 - Measure the resistance at the air conditioning clutch relay, between pin 3 and pin 5, component side.
 - Is a resistance of more than 10,000 Ohm measured?
 - If yes, go to 2.
 - If no, RENEW the air conditioning clutch relay.



- Use a test cable to connect pin 2 of the air conditioning clutch relay, component side, to the battery negative terminal.
- Measure the resistance at the air conditioning clutch relay, between pin 3 and pin 5, component side.
- Is a resistance of less than 2 Ohm registered?
 - If yes, then the air conditioning clutch relay is OK.
 - If no, RENEW the air conditioning clutch relay.



2. Check the normally open contact in the switched state:

Use a fused test cable (1 A) to connect pin 1 of the air conditioning clutch relay, component side, to the battery positive terminal.

GENERAL PROCEDURES

Air Conditioning (A/C) Clutch Air Gap Adjustment(34 628 6)

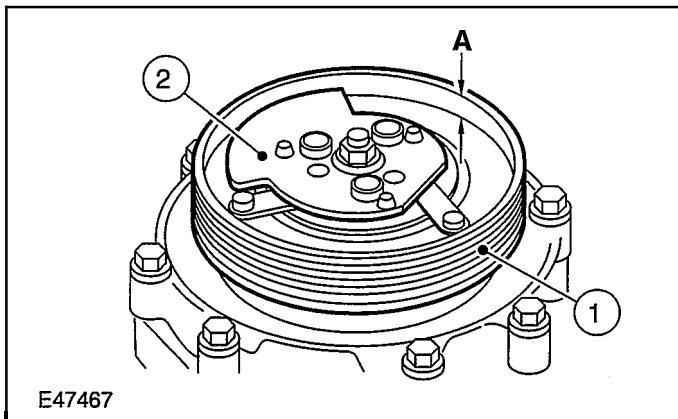
Materials

Name	Specification
Spacer washer set	

■ Measurement for recessed pulley

Check the air gap **A** between the drive plate and the pulley at 60 degree intervals around the circumference of the pulley, while operating the **A/C** clutch several times by means of a **5A** fused jumper wire connected between the battery positive terminal, **A/C** clutch and battery ground. For additional information, refer to Specifications in this section.

1. Belt pulley
2. Drive plate
- Air gap A (the difference measured between the A/C clutch engaged and disengaged)

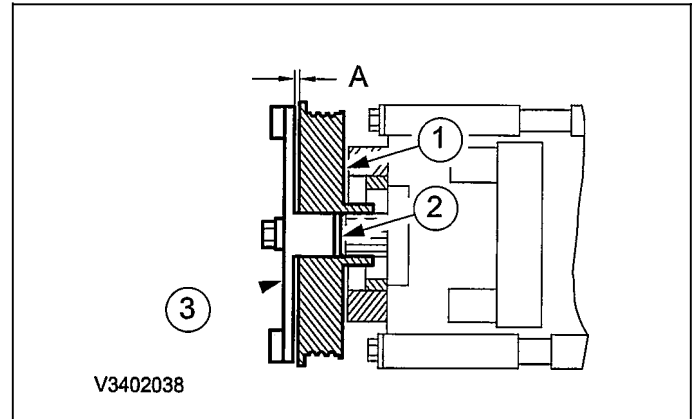


2. Measurement for non recessed pulley

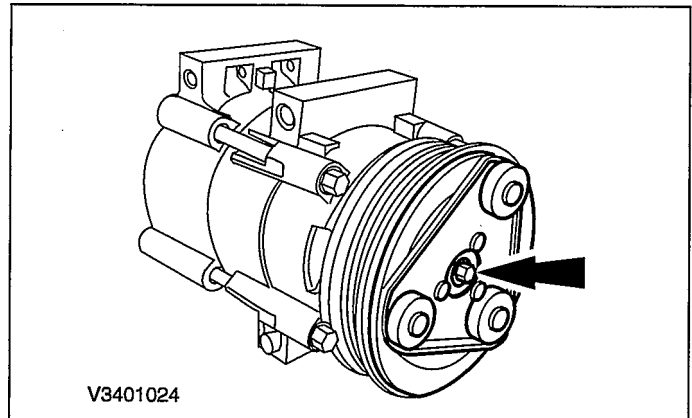
Check the air gap A between the drive plate and the pulley at 60 degrees intervals around the circumference. For additional information, refer to Specifications in this section.

1. Belt pulley
2. Spacer washer
3. Drive plate

- Air gap A



3. Remove the drive plate.



4. Correct air gap **A** as necessary using spacer washers.
5. Install the drive plate. For additional information, refer to Specifications in this section.
6. **Check air gap A as described in step 1 or step 2. Repeat steps 3-5 if necessary.**

GENERAL PROCEDURES

Air Conditioning (A/C) System Recovery, Evacuation and Charging (34 620 2)

General Equipment

Refrigerant centre

Refrigerant analyzer

1. **NOTE:** This step is not necessary for vehicles equipped with the 1.6L Duratorq-TDCi (DV) diesel engine.

Remove the right-hand headlamp.

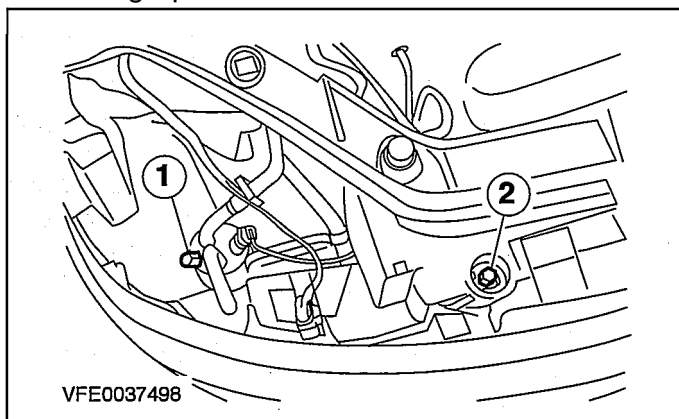
For additional information, refer to: Headlamps (417-01, Removal and Installation).

2. **⚠ CAUTION:** The refrigerant analyzer must be used before recovery, otherwise the refrigerant centre may become contaminated. Contaminated refrigerant must be disposed of as hazardous waste. Always follow the manufacturer's instructions when using the refrigerant centre and the refrigerant analyzer.

NOTE: All vehicles except those with the 1.6L Duratorq-TDCi (DV) diesel engine

Unscrew and remove the protective caps from the **A/C** charging connections.

1. Low-pressure connection
2. High-pressure connection

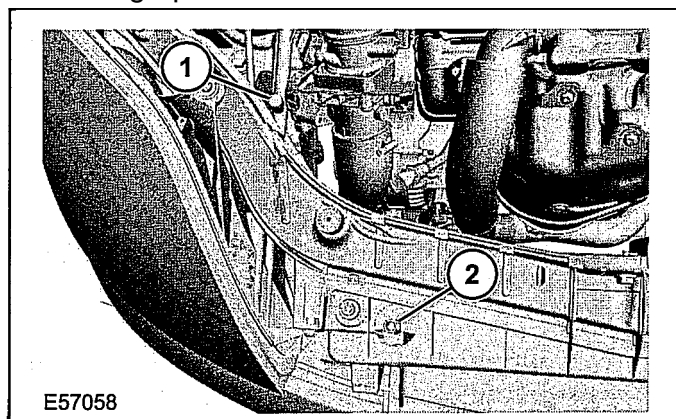


3. **⚠ CAUTION:** The refrigerant analyzer must be used before recovery, otherwise the refrigerant center may become contaminated. Contaminated refrigerant must be disposed of as hazardous waste. Always follow the manufacturer's instructions when using the refrigerant center and the refrigerant analyzer.

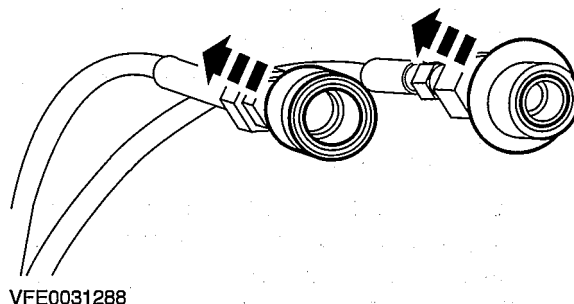
NOTE: Vehicles with the 1.6L Duratorq-TDCi (DV) diesel engine

Unscrew and remove the protective caps from the **A/C** charging connections.

1. Low-pressure connection
2. High-pressure connection



4. Pull back the catches of the quick-fit unions on the refrigerant centre lines.



5. **NOTE:** Larger inner diameter for high-pressure side. Smaller inner diameter for low-pressure side.

Connect the refrigerant centre lines to the **A/C** charging connections.

6. **⚠ WARNING:** When recovering the refrigerant do not allow it to enter the atmosphere under any circumstances. Failure to follow these instructions may result in personal injury.


GENERAL PROCEDURES


NOTE: When removing components of the air conditioning system, calculate the residual quantity of refrigerant oil.

For additional information, refer to: Refrigerant Oil Adding (412-00, General Procedures).

Recover the refrigerant from the **A/C** system via the low-pressure connection in accordance with the refrigerant centre manufacturer's instructions.

7. CAUTIONS:

 **The A/C** system must be evacuated for about 30 minutes before recharging, to ensure that it operates correctly.

 **If** moisture was able to enter an open system over an extended period (several hours), install a new **accumulator/dehydrator** and increase the evacuation time to 2-3 hours.

Evacuate the **A/C** system according to the refrigerant centre manufacturer's instructions.

8. **NOTE:** If an air conditioning system that was filled with refrigerant is being evacuated, some refrigerant will still be in the refrigerant oil in the compressor. This remaining refrigerant may evaporate, causing a slight increase in pressure during the leak test. **The** system is leak-free provided, that this pressure increase does not exceed 20 mbar (2 **kPa**, 0.29 psi).


Perform the leak test.

1. For the leak test, close the hand valves on the pressure gauge set, switch off the refrigerant centre vacuum pump and observe the low pressure gauge.
2. Locate any leaks in the **A/C** refrigerant circuit using a leak tester. For additional information, refer to: (412-00)

Flourescent Dye Leak Detection
(General Procedures),
Electronic Leak Detection
(General Procedures).

9. Top up with refrigerant oil.

For additional information, refer to:
Refrigerant Oil Adding (412-00,
General Procedures).


 **CAUTION:** The air conditioning system must always be evacuated before charging. Failure to observe this instruction can cause damage to the **A/C** system.

10. **NOTE:** Depending on the type of refrigerant centre and the equipment (with or without heated filling cylinder), the air conditioning system is either charged with liquid via the high-pressure connection or with gas through the low-pressure connection.

NOTE: Charge quantity on sticker in engine compartment.


Charging the **A/C** system (with liquid) via the high-pressure connection.

1. Open the shut-off valve on the high-pressure side.
2. Switch the refrigerant centre to "Fill" mode and fill with the prescribed quantity of liquid refrigerant (**R134a**).

 **CAUTION:** Only gaseous charging of the air conditioning system is performed via the low-pressure connection. Failure to follow these instructions may cause damage to the compressor.

Charging the **A/C** system via the low-pressure connection.

1. Open the shut-off valve on the low-pressure side.
2. Switch the refrigerant centre to "Fill" mode and charge with gaseous refrigerant.
3. Top up with the remaining amount of refrigerant whilst the air conditioning is switched on. For this purpose, run the engine at approx. 1200-1500 rpm. Switch the air conditioning to maximum cooling power and fresh air mode. Set the blower to maximum speed. Fill with the remainder of the prescribed fill capacity.

12.  **WARNING:** Do not detach the high-pressure hose when the air conditioning is switched on. Failure to follow these instructions may result in personal injury.

Disconnecting the refrigerant centre.

1. Close the shut-off valves.
2. Switch off the refrigerant centre.
3. Disconnect the service unit line from the **A/C** charging connection.
4. Attach the protective caps to the filling valves.

GENERAL PROCEDURES


13. **NOTE:** This step is not necessary for vehicles equipped with the 1.6L Duratorq-TDCi (DV) diesel engine.

Install the right-hand headlamp.

For additional information, refer to: Headlamps (417-01, Removal and Installation).

GENERALPROCEDURES


Refrigerant Oil Adding(34 621 1)

 **CAUTION:Collect** the refrigerant oil in a clean measuring cylinder.

■ **NOTE:This** step only needs to be carried out when replacing the A/C compressor.

NOTE:Rotate the compressor shaft at least 6 to 8 turns when draining the refrigerant oil.

Drain the refrigerant oil from the defective **A/C** compressor and dispose of it.


2.  **CAUTION:If** the refrigerant oil is not to be reused within 15 minutes of draining it from the new compressor, store it in a closed and sealed container to prevent ingress of moisture.


NOTE:The refrigerant oil from the new A/C compressor needs to be drained because the fill capacities at the factory are not always the same.

NOTE:Rotate the compressor shaft at least 6 to 8 turns when draining the refrigerant oil.

Drain the refrigerant oil from the new **A/C** compressor.

3. CAUTIONS:

 **The** amount of refrigerant oil topped up must not exceed the refrigerant oil **fill** capacity.

 **If** other **A/C** components are being renewed in addition to the **A/C** compressor, there is no need to top up with additional refrigerant oil, apart from filling the compressor.

Add the calculated quantity of new refrigerant oil. See: Specifications (**412-00** Heating, Ventilation, Air-Conditioning - General information, Specifications).

GENERAL PROCEDURES

Air Distribution System Cleaning

General Equipment

Spray gun with hose	
Materials	
Name	Specification
Odour eliminating agent (240 ml) (TOX Number 142040)	

All vehicles

▲WARNING: Avoid contact with eyes and skin; wear gloves and respiratory protection. Ensure that you perform this operation in a well ventilated room. Keep all vehicle doors and windows open for the duration of the operation. Do not inhale vapors under any circumstances. Do not smoke and avoid open fire and unprotected light sources. Avoid contact with eyes and skin; wear gloves and respiratory protection. Ensure that you perform this operation in a well ventilated room. Keep all vehicle doors and windows open for the duration of the operation. Do not inhale vapors under any circumstances. Do not smoke and avoid open fire and unprotected light sources. Failure to observe this instruction can lead to injuries.

NOTE: The odour eliminating agent can remove deposits in the heater housing but cannot prevent odours that are distributed by the ventilation system, for example those caused by damp carpets.

Precisely locate the musty or damp odour.

2. Disconnect the low pressure switch connector.
3. Turn on the ignition.
4. Open all ventilation nozzles.
5. Set the temperature control to maximum heating power.
6. Set the blower motor control switch to the highest setting.
7. Set the air distribution control to the fresh air position.
8. Start the engine and let it warm up to operating temperature.

9. To dry out the system, switch off the air conditioning system and ventilate the vehicle for approx. **15** minutes.

10. Switch off the engine.

Only Focus to MY 2004.75 and Galaxy

11. Remove the blower motor.

Only Ka, Fiesta 96 to MY 2002.25 and Puma

12. Remove the blower motor resistor

Only Fiesta from MY 2002.25, Focus C-Max and Focus from MY 2004.75 with pollen filter

13. Remove the pollen filter.

Only Fiesta from MY 2002.25, Focus C-Max and Focus from MY 2004.75 without pollen filter

14. Remove the pollen filter housing cover.

All vehicles

15. Fill the spray gun with the odour eliminating agent (**240 ml**).

16. **▲WARNING:** The maximum pressure of **13.5 bar** must not be exceeded. Failure to observe this instruction can lead to injuries.


Use the tyre inflator to apply pressure of **5.5** to **10 bar** (operating pressure) to the spray gun.

17. Insert the hose of the spray gun as far as possible into the opening created by removal of the above component and point it in the direction of the evaporator.
18. By moving the hose, spray the odour eliminating agent over the entire surface of the evaporator.
19. Spray all of the odour eliminating agent into the opening.
 - Allow the odour eliminating agent to take effect for 10 minutes.
20. Install the components in reverse order.
21. Start the engine, switch off the air conditioning system and ventilate the vehicle for **approx. 15** minutes.
22. Open all ventilation **nozzles**.

GENERALPROCEDURES

23. Set the temperature control to maximum heating power.
24. Set the blower motor control switch to the highest setting.
25. Set the air distribution control to the fresh air position.
26. Switch off the engine.
27. Connect the low pressure switch connector.
28. Ventilate the vehicle with the doors open for another 30 minutes.

GENERALPROCEDURES**Contaminated Refrigerant Handling(34 620 9)**

 **CAUTION:**Any R134a or R12 refrigerant which is contaminated with unsuitable refrigerant should be extracted only by means of a suitable servicing unit designed for the purpose of collecting and storing contaminated refrigerant, so that the spread to other vehicles can be prevented.

- Use refrigerant identification equipment to check that there is contaminated refrigerant in the air conditioning system.
- 2. Inform the customer about the additional cost to repairing the system caused by the contamination.
- 3. Extract the contaminated refrigerant.

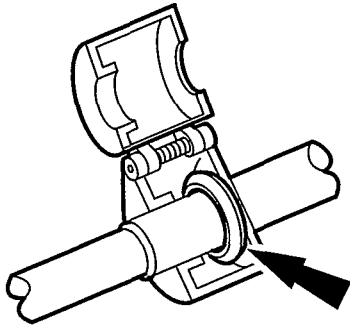
GENERAL PROCEDURES

Spring Lock Coupling

1. **NOTE:** Select special tool to suit the line diameter.

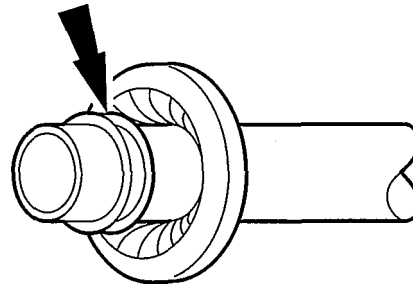
Fit the special tool.

- Fit the special tool so that the inner collar can be guided into the clamping spring.



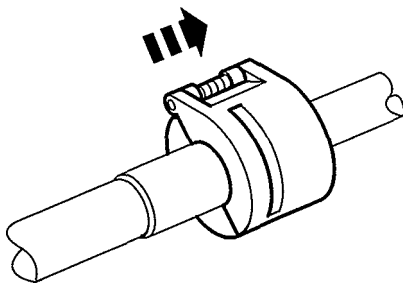
ELM3402005

- Check the clamping spring for damage.
- Carefully pull out any damaged clamping springs using a thin piece of wire and install new one.



ELM3402007

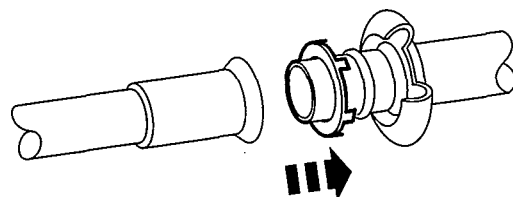
2. Press the special tool into the clamping spring.



VFE0021643

5. **NOTE:** Clean the connections using refrigerant oil and a lint-free cloth.

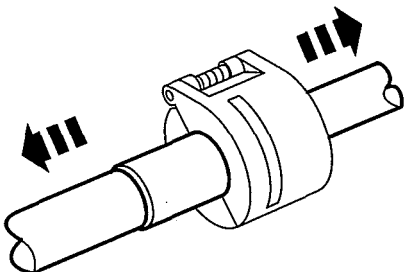
Press the indicator ring into the clamping spring.



VFE0021645

3. Disconnect the refrigerant line.

- Discard the O-ring seals.



VFE0021644

6. **NOTE:** Install new refrigerant line O-ring seals.

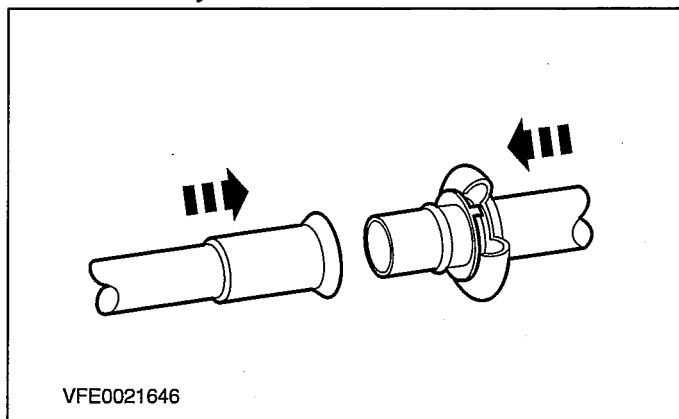
NOTE: Coat the refrigerant line O-ring seals in clean refrigerant oil prior to installation.

Connect the refrigerant lines.

4. Connect the refrigerant line.

GENERAL PROCEDURES

- Check that the clamping spring engages correctly.



GENERALPROCEDURES**Electronic Leak Detection(34 620 7)****General Equipment**

Automatic Calibration Halogen Leak Detector
Manifold Gauge Set
Refrigerant Identifier

▲ WARNING:Good ventilation before leak detection is necessary in the area where it is to be performed. If the surrounding air is contaminated with refrigerant gas, the leak detector will indicate this gas all the time. Odors from other chemicals such as antifreeze, diesel fuel, disc brake cleaner, or other cleaning solvents can cause the same problem. While leak detection air movement must be prevented.

1. **▲ CAUTION:The** refrigerant identification equipment must be used before the manifold gauge set is installed, otherwise the manifold gauge may become contaminated. Contaminated refrigerant must be disposed of as special waste. The manufacturer's instructions must be followed when working with the service unit.

NOTE:Both manifold gauges should indicate 4,1-5,5 bar at 24°C with the engine off.

Attach the manifold gauge set to the service gauge port valves.

1. For the leak test, close the manual valves on the gauge set.
2. If little or no pressure is indicated, charge the system with approx. 300g of refrigerant.

For additional information, refer to Air Conditioning (A/C) System Recovery, Evacuation and Charging in this section.

2. Use **R-134a** Automatic Calibration Halogen Leak Detector to leak test the refrigerant system. Follow the instructions included with leak detector for handling and operation techniques.

3. If a leak is found, recover the **A/C** system.

For additional information, refer to Air Conditioning (A/C) System Recovery, Evacuation and Charging in this section.

GENERALPROCEDURES

Fluorescent Dye Leak Detection

General Equipment

UV Spot Lamp
Manifold Gauge Set
Fluorescent Dye Injector

NOTE: Vehicles built 0711999 onwards have a fluorescent tracer dye tablet inserted into the air conditioning (A/C) system. If tracer dye is present, there is a green cross on the suction accumulator.

NOTE: On vehicles built up to 0711999 tracer dye must be added.

1. Using the dye injector, add 7.4 ml of Fluorescent Tracer Dye.

NOTE: Some vehicles may have signs of refrigerant oil at the spring lock couplers. This may be caused from the assembly process which applies to the fittings before installation to aid in assembly. When a spring lock coupler is suspected of leaking, always wipe the fitting clean and verify the leak with R-134a Automatic Calibration Halogen Leak Detector.

NOTE: The exact location of leaks can be pinpointed by the bright yellow - green glow of the tracer dye. Since more than one leak may exist, always inspect each component.

2. Check for leaks using a 120 Watt UV Spot Lamp. Always scan all components, fittings and lines of the **A/C** system.
3. After the leak is found and repaired, remove any traces of dye with a general purpose oil solvent.
4. Verify the repair by operating the system for some minutes and inspecting with the UV lamp again.

GENERAL PROCEDURES**Vacuum Leak Detection(34 620 3)**

1. Drain the air conditioning (NC) system.

For additional information, refer to Air
Conditioning (A/C) System Recovery,
Evacuation and Charging in this section.

SECTION 412-01 Air Distribution and Filtering

VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

PAGE

DESCRIPTION AND OPERATION

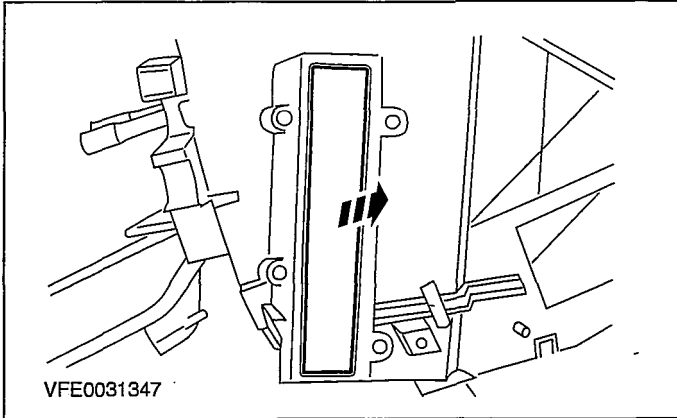
Air Distribution.....	412-01-2
Pollen filter.....	412-01-2

DIAGNOSIS AND TESTING

Air Distribution and Filtering.....	412-01-3
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REMOVAL AND INSTALLATION

Pollen Filter..... (34 350 0)	412-01-4
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DESCRIPTION AND OPERATION**Air Distribution****Pollen filter**

The purpose of the pollen filter is to remove particles which are 0,003 mm or larger from the air taken in.

If installed, it is located in the heat exchanger/evaporator housing.

It is accessible from the left-hand footwell.

The pollen filter must be renewed in accordance with the service intervals.

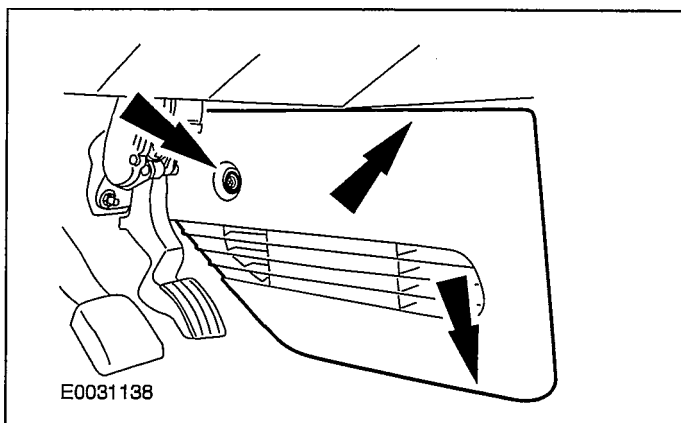
DIAGNOSIS AND TESTING**Air Distribution and Filtering**

REFER to Section 412-00 [Climate Control System
- General Information].

REMOVAL AND INSTALLATION**Pollen Filter(34 350 0)****Removal**

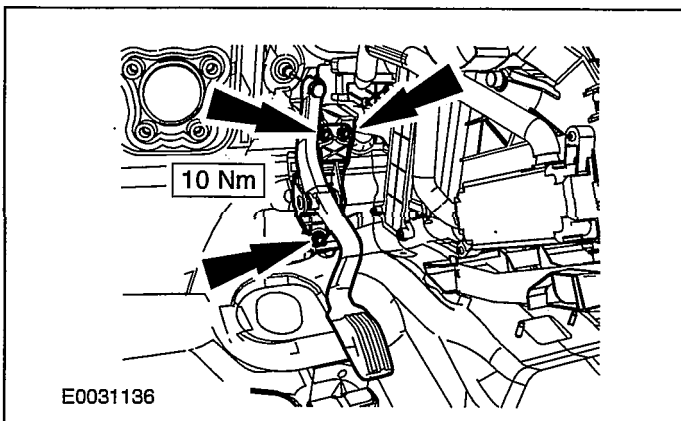
All vehicles

- **Detach the centre console side trim on the left-hand side.**



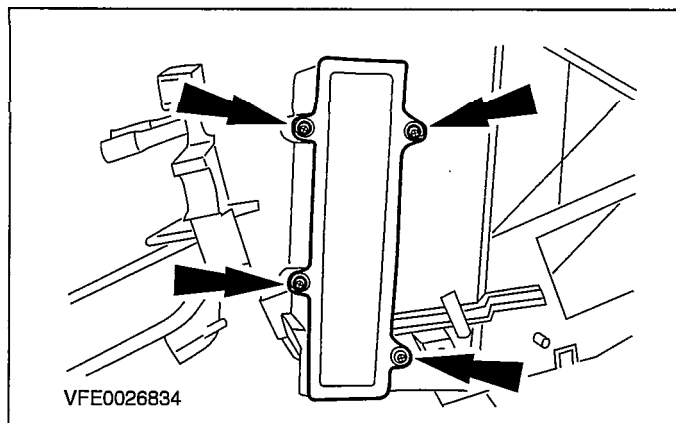
Left-hand drive vehicles

- 2. Detach the accelerator pedal with its bracket from the bulkhead and lay it to one side (vehicle with petrol engine shown).**

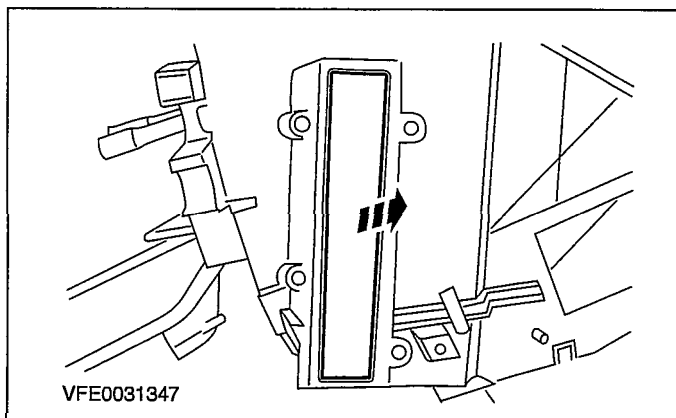


All vehicles

- 3. Remove the pollen filter housing cover.**



- 4. Remove the pollen filter.**

**Installation**

- 1. Reinstall the components in reverse order.**

SECTION 412-02 Heating and Ventilation

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

SPECIFICATIONS

Specifications..... 412-02-2

DESCRIPTION AND OPERATION

Heating and Ventilation..... 412-02-3

Heater/Evaporator Core Housing..... 412-02-3

DIAGNOSIS AND TESTING

Heating and Ventilation..... 412-02-6

REMOVAL AND INSTALLATION

Blower Motor..... (34 374 0) 412-02-7

Heater Core..... (34 364 0) 412-02-9

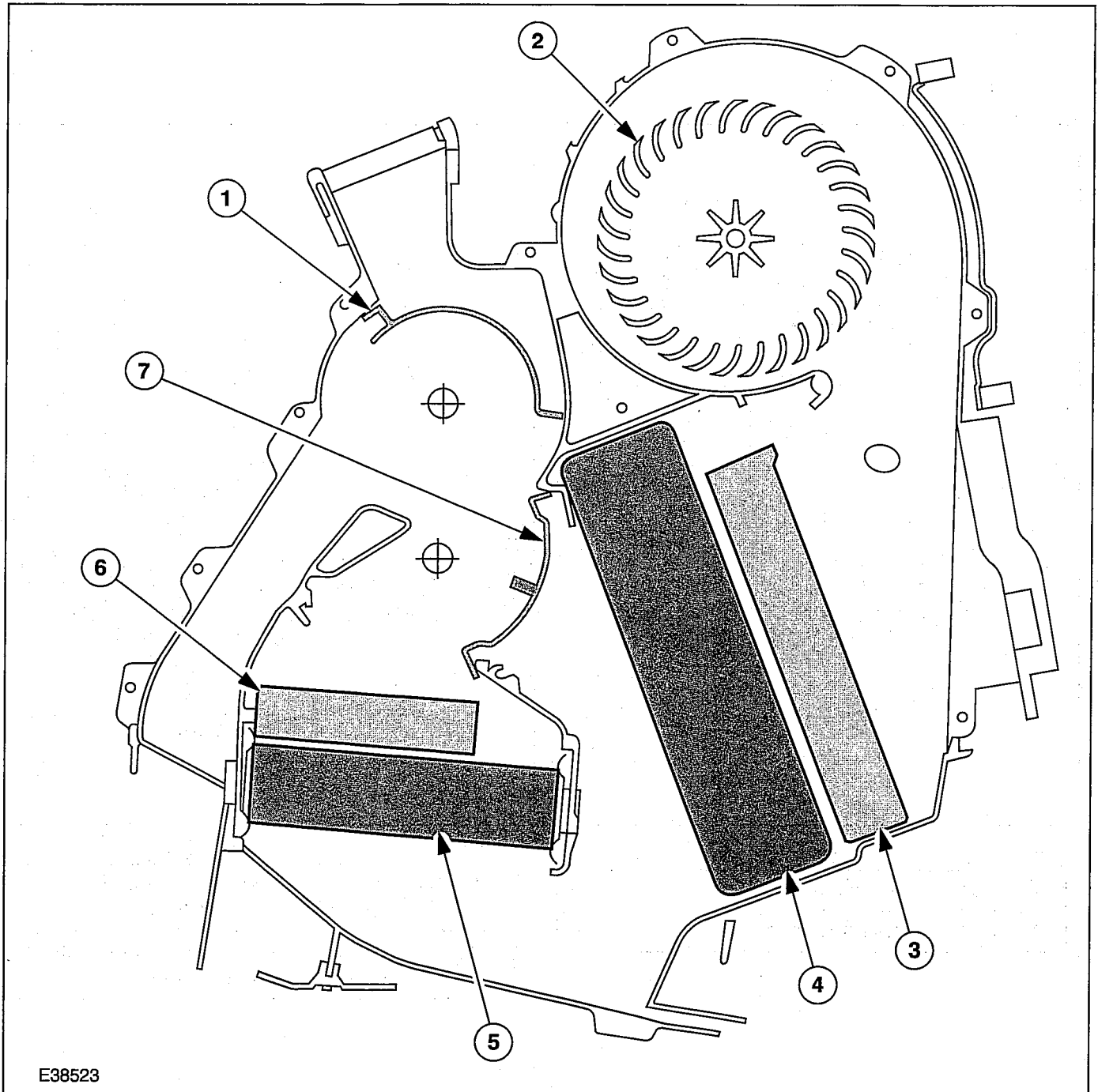
Heater Core and Evaporator Core Housing..... (34 354 0;
34 354 6;
34 354 7) 412-02-10

DISASSEMBLY AND ASSEMBLY

Heater Core and Evaporator Core Housing..... 412-02-23

SPECIFICATIONS**Torque Specifications**

Item	Nm	lb-ft	lb-in
Bolts, reinforcing element	20	15	-
Bolts, heater core /evaporator housing to reinforcing element	5	-	44
Nut, heater core /evaporator housing	1	-	9
Bolts, electric booster heater	1	-	9

DESCRIPTION AND OPERATION**Heating and Ventilation****Heater/Evaporator Core Housing****Overview**

Item	Description
1	Air distribution door
2	Blower motor
3	Pollen filter (optional)

Item	Description
4	Evaporator core (only vehicles with Air Conditioning (A/C))
5	Heater core

DESCRIPTION AND OPERATION

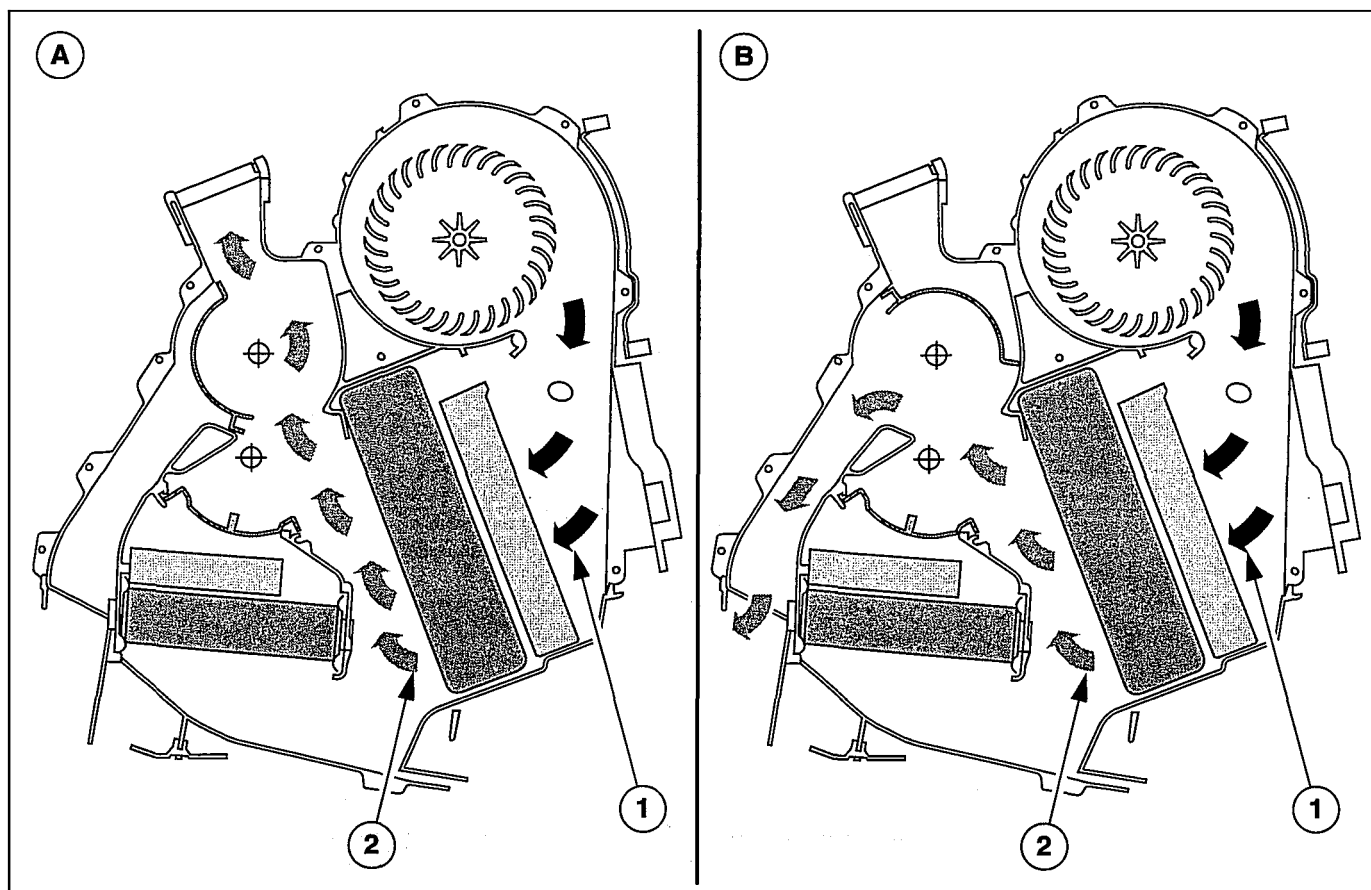
Item	Description
6	Electric booster heater (only vehicles with diesel engine)
7	Temperature control air distribution door

On vehicles with A/C, adjustment of the air inlet blend doors is performed via control cables operated by an actuator motor.

Vehicles without air conditioning do not feature recirculated air

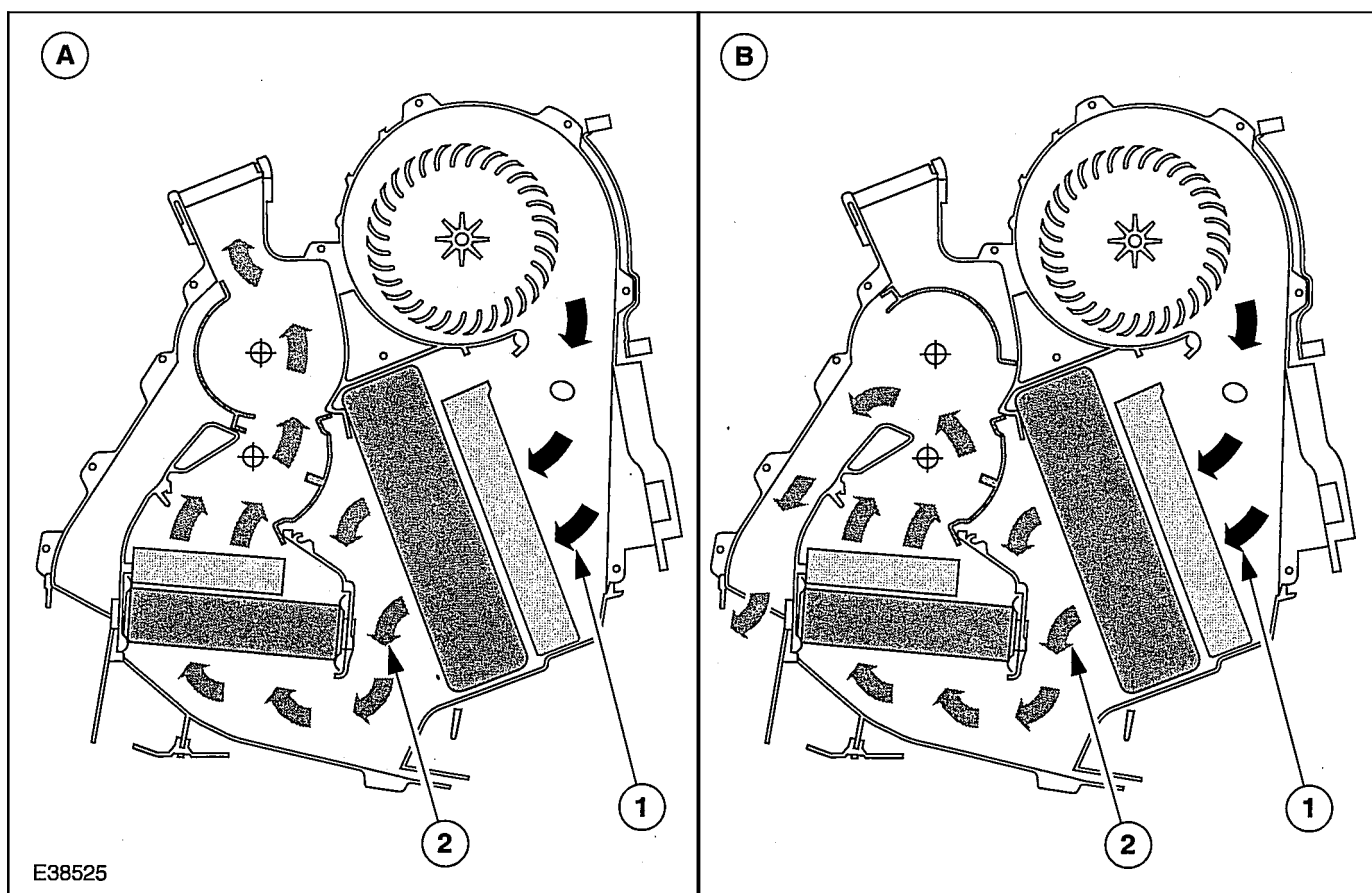
On vehicles built from 08/2005 with Electronic Automatic Temperature Control (EATC), the actuator motors used for adjustment of the air distribution door and the temperature control air distribution door are controlled via the climate control assembly.

Cold air distribution



Item	Description
A	Cold air to the vents
B	Cold air to the footwell

Item	Description
1	Air flow upstream of the pollen filter / evaporator core (if equipped)
2	Air flow downstream of the pollen filter / evaporator core (if equipped)

DESCRIPTION AND OPERATION**Warm air distribution****Item Description**

A	Warm air to the vents
B	Warm air to the footwell
1	Air flow upstream of the pollen filter 1 evaporator core (if equipped)
2	Air flow downstream of the pollen filter 1 evaporator core (if equipped)

DIAGNOSIS AND TESTING**Heating and Ventilation**

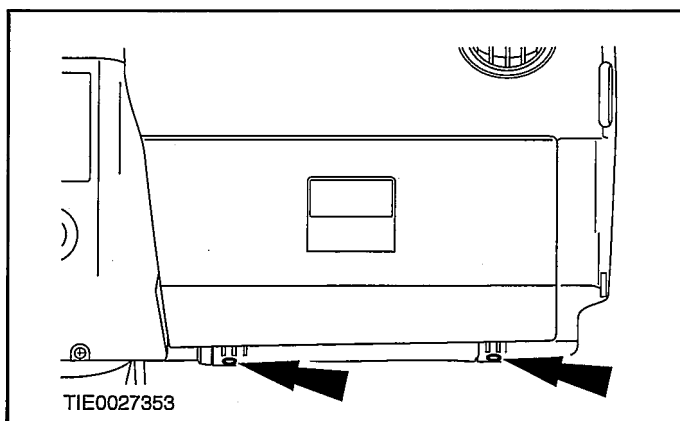
REFER to Section 412-00 [Climate Control System
- General Information].

REMOVAL AND INSTALLATION

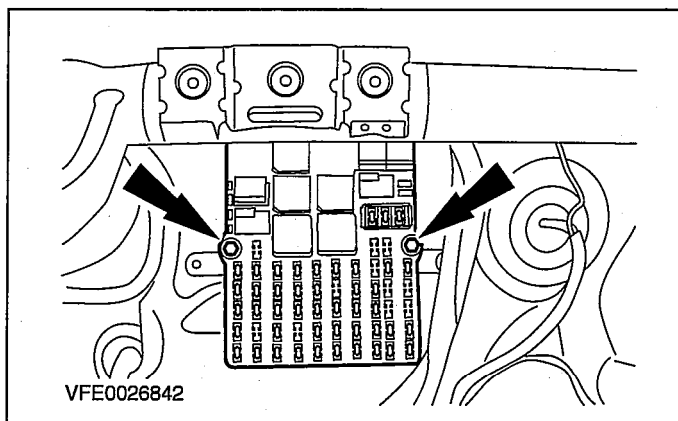
Blower Motor(34 374 0)

Removal

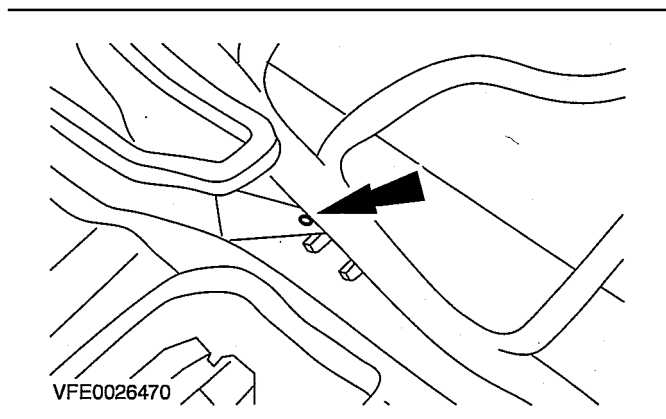
1. Remove the glove box.



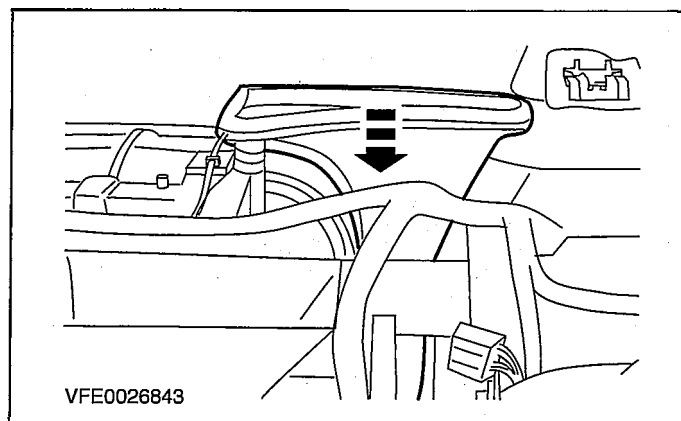
2. Detach the central junction box from the bulkhead and lay it to one side (shown without the crash padding for clarity).



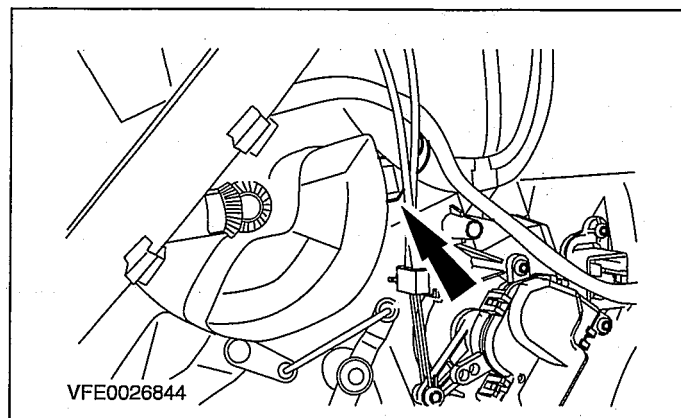
3. Unscrew and remove the bolt from the defrost air duct (shown without the crash padding for clarity).



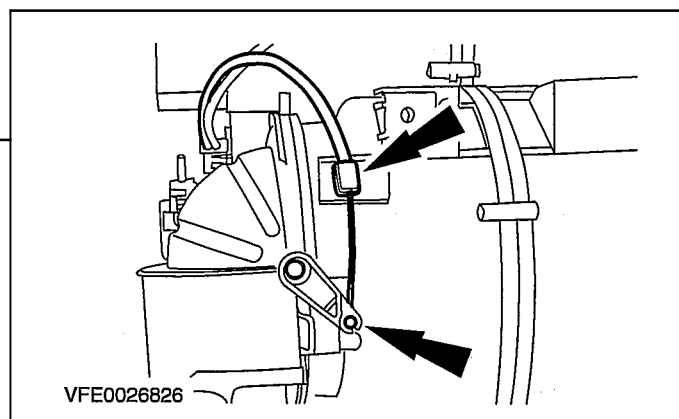
4. Remove the defrost air duct (shown without the crash padding for clarity).



5. Disconnect the blower motor connector (LHD vehicle shown).

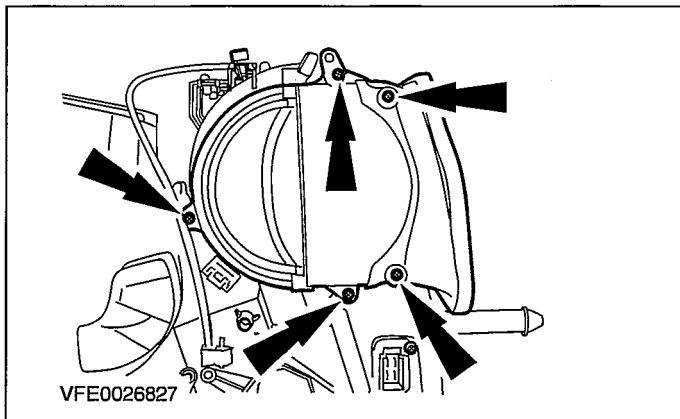


6. Detach the air intake flap actuation cable.

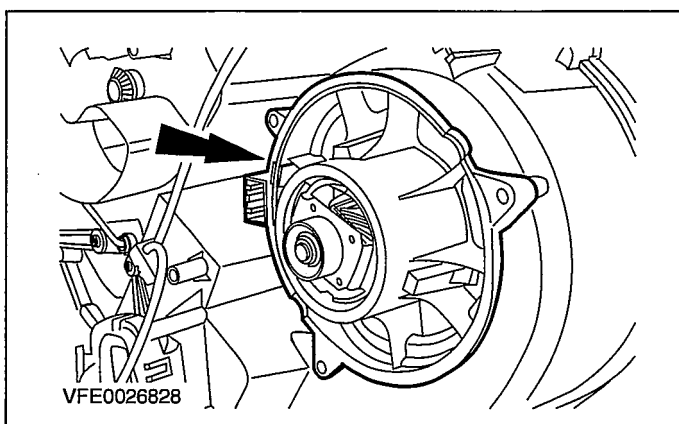


REMOVAL AND INSTALLATION

7. Remove the air intake flap (shown with the heater housing removed for clarity).



8. Remove the blower motor.

**Installation**

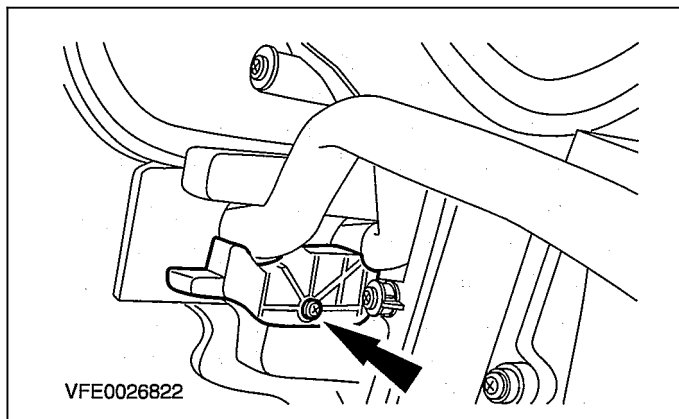
1. Reinstall the components in reverse order.

REMOVAL AND INSTALLATION**Heater Core(34 364 0)****Removal**

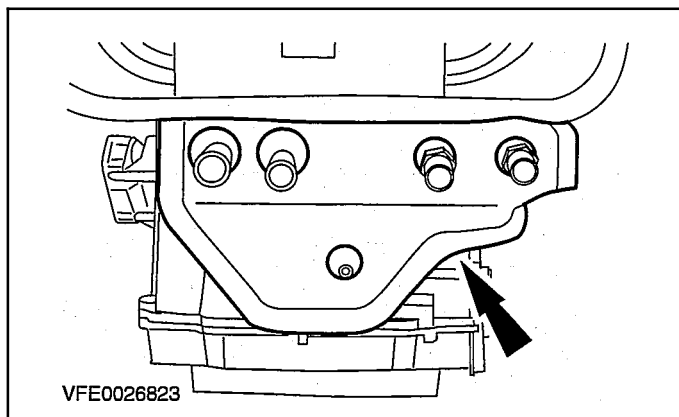
- **_Remove the heater core / evaporator housing.**

For additional information, refer to Heater core / evaporator housing in this section.

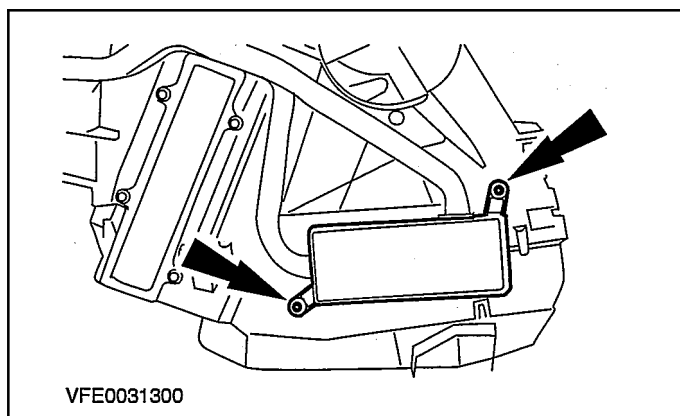
- 2. Remove the bracket for the coolant pipes.**



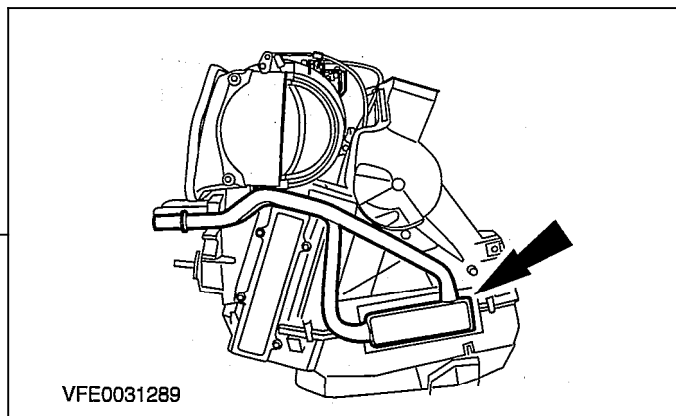
- 3. Remove the heater core / evaporator housing gasket.**



- 4. Remove the heater core cover.**



- 5. Remove the heater core.**

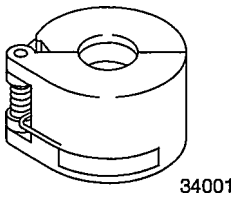
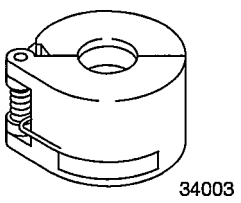
**Installation**

- **_Reinstall the components in reverse order.**

REMOVAL AND INSTALLATION

Heater Core and Evaporator Core Housing(34 354 0; 34 354 6; 34 354 7)

Special Tool(s)

 <p>34001</p>	Remover, quick-release coupling 1/2" (blue) 412-027 (34-001)
 <p>34003</p>	Remover, quick-release coupling 5/8" (black) 412-038 (34-003)

Removal

All vehicles

1. Drain the cooling system. For additional information, refer to:

Cooling System Draining, Filling and

Bleeding - **1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-I6V (Sigma)** (303-03 Engine Cooling - **1.3L Duratec-8V (Rocam)/1.25L Duratec-I6V (Sigma)/1.4L Duratec-I6V (Sigma)/1.6L Duratec-I6V (Sigma)**, General Procedures),

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - **1.4L Duratorq-TDCi (DV) Diesel**, General Procedures),

Cooling System Draining, Filling and Bleeding (**303-03 Engine Cooling - 2.0L Duratec-HE (M14)**, General Procedures),

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - **1.6L Duratorq-TDCi (DV) Diesel**, General Procedures).

2. Remove the right-hand **headlamp** assembly.

For additional information, refer to:

Headlamp Assembly (417-01 Exterior Lighting, Removal and Installation).

3. Drain the air conditioning system.

For additional information, refer to: Air Conditioning (**A/C**) System Recovery, Evacuation and Charging (412-00 Climate Control System - General Information, General Procedures).

4. Remove the instrument panel.

For additional information, refer to: Instrument Panel - Vehicles Built Up To: I012005 (501-12 Instrument Panel and Console, Removal and Installation).

5. Remove the air cleaner. For additional information, refer to: (303-12 Intake Air Distribution and Filtering)

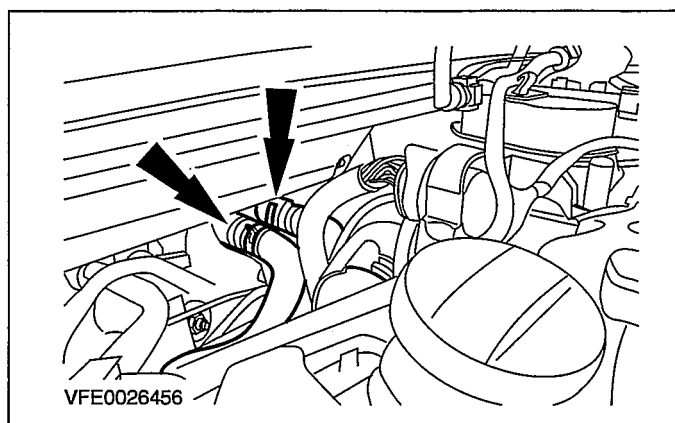
Air Cleaner - **1.25L Duratec-I6V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-I6V (Sigma)** (Removal and Installation),

Air Cleaner - **1.4L Duratorq-TDCi (DV) Diesel** (Removal and Installation),

Air Cleaner - **2.0L Duratec-HE (M14)** (Removal and Installation),

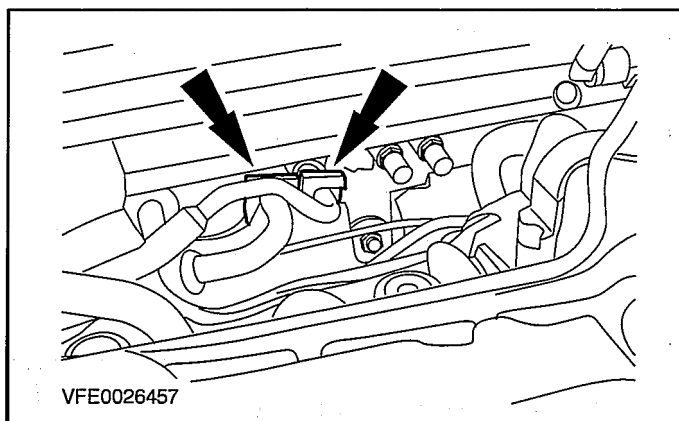
Air Cleaner - **1.6L Duratorq-TDCi (DV) Diesel** (Removal and Installation).

6. Detach the **coolant** hoses **from** the heater core.



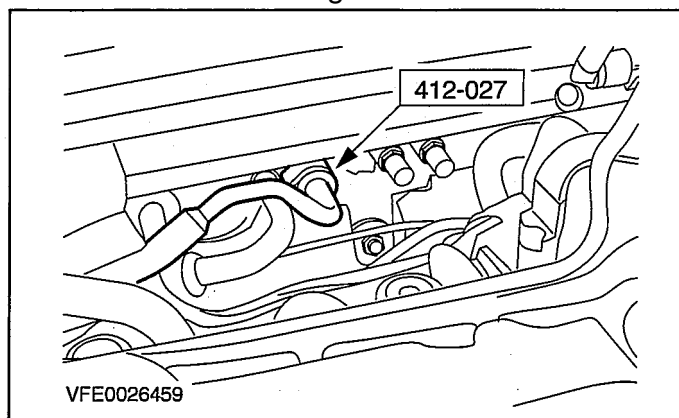
REMOVAL AND INSTALLATION

7. Remove the retaining clips of the quick-release couplings on the refrigerant lines.



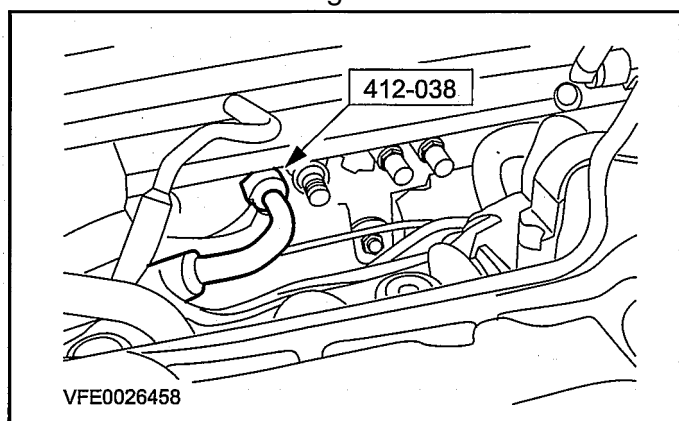
8. Using the special tool, detach the left-hand refrigerant line from the evaporator core.

- Discard the O-ring seals.

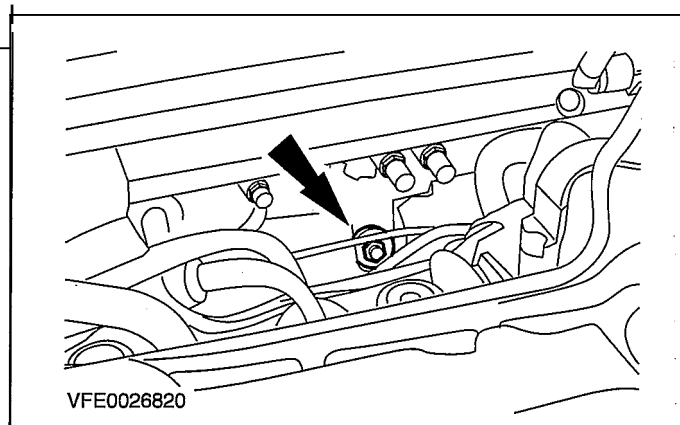


9. Using the special tool, detach the right-hand refrigerant line from the evaporator core.

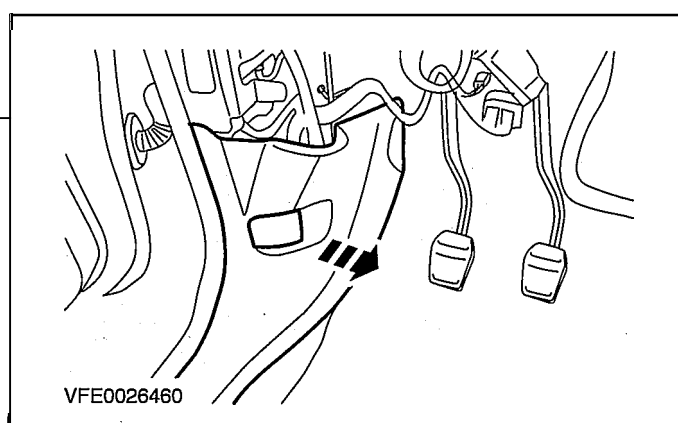
- Discard the O-ring seals.



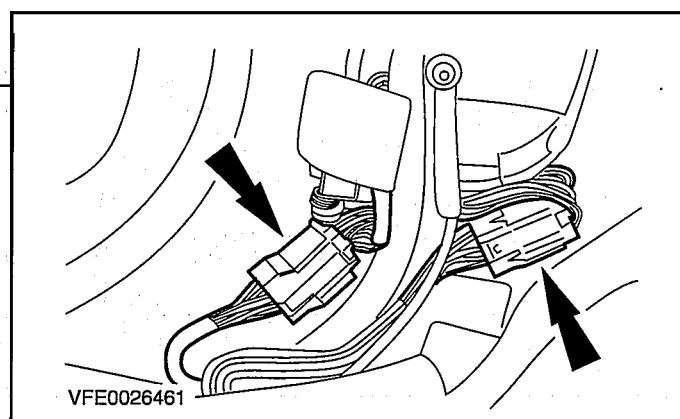
10. Unscrew and remove the nut from the heater core and evaporator core housing.



11. Unclip part of the left-hand **footwell** trim.

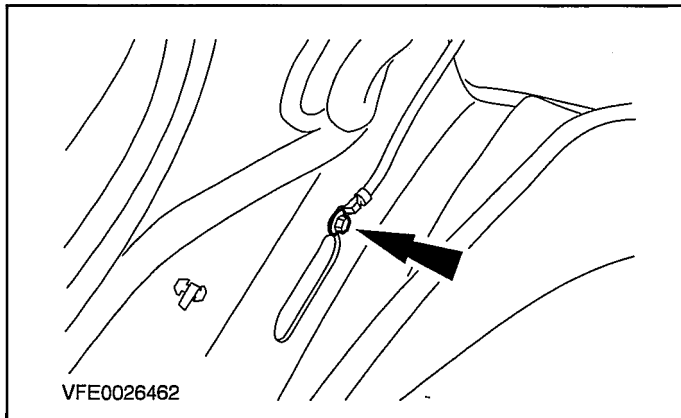


12. Disconnect the left-hand electrical connector of the instrument panel wiring harness (the **footwell** trim is shown removed for clarity).

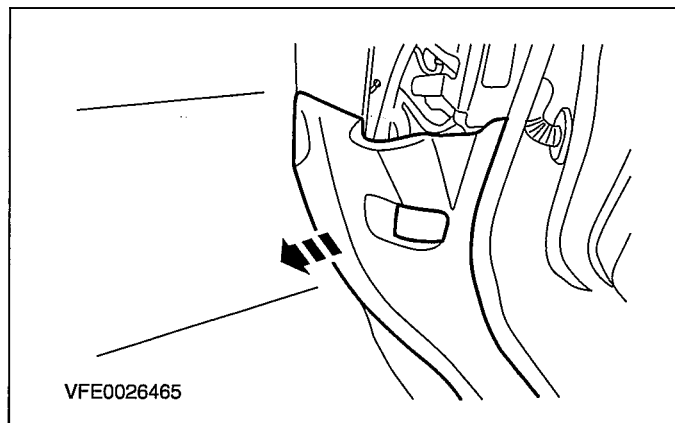


REMOVAL AND INSTALLATION

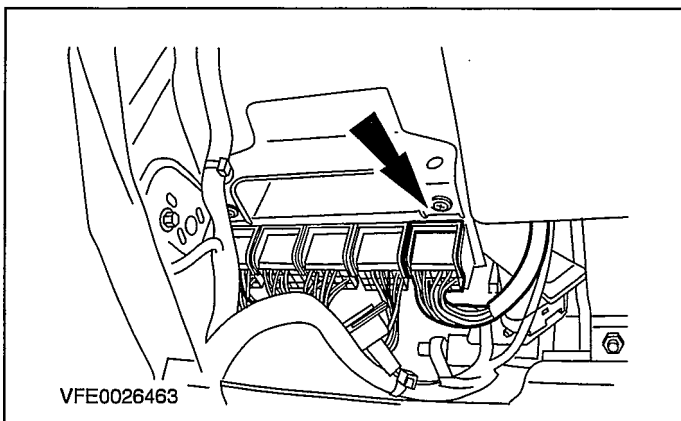
13. Remove the ground strap bolt in the left-hand footwell.



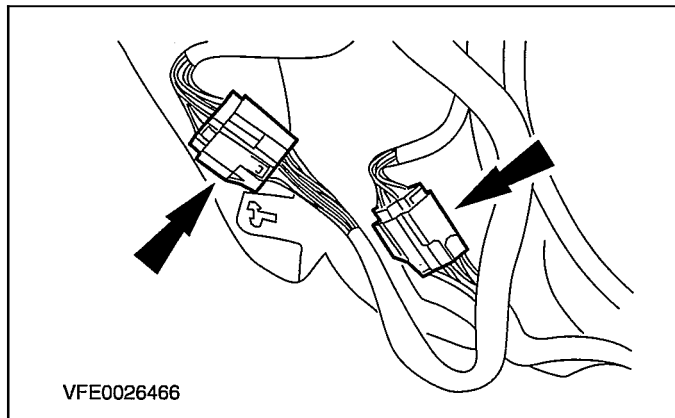
16. Unclip part of the right-hand **footwell** trim.



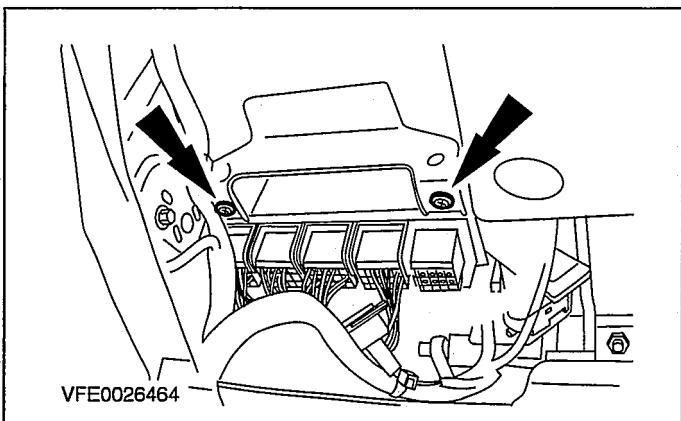
14. Disconnect the electrical connector of the generic electronic module (GEM).



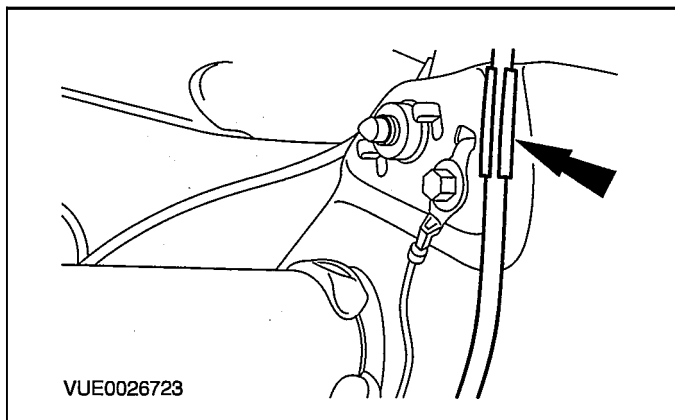
17. Disconnect the right-hand electrical connector of the instrument panel wiring harness (the **footwell** trim is shown removed for clarity).



15. Detach the GEM from the in-vehicle crossbeam and lay it to one side.

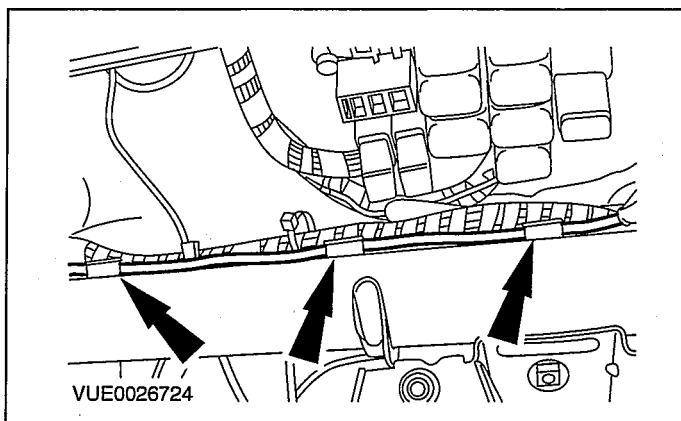


18. Detach the antenna cable from the right-hand upper clip on the in-vehicle crossbeam.

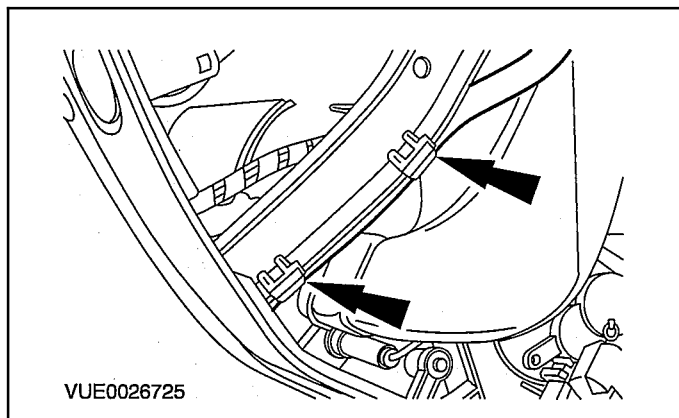


REMOVAL AND INSTALLATION

19. Detach the antenna cable from the right-hand lower clips on the in-vehicle crossbeam.

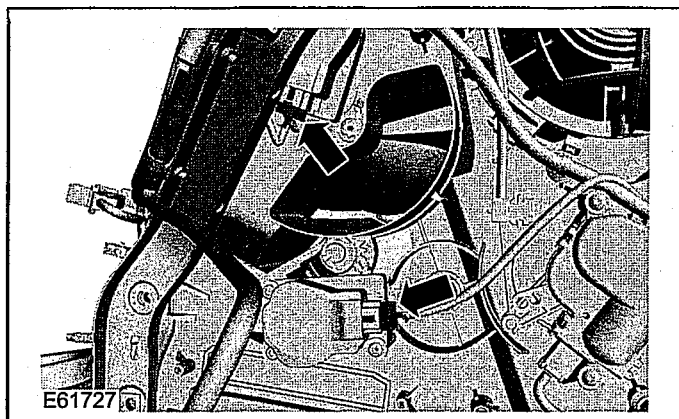


20. Detach the antenna cable from the central clips on the in-vehicle crossbeam.



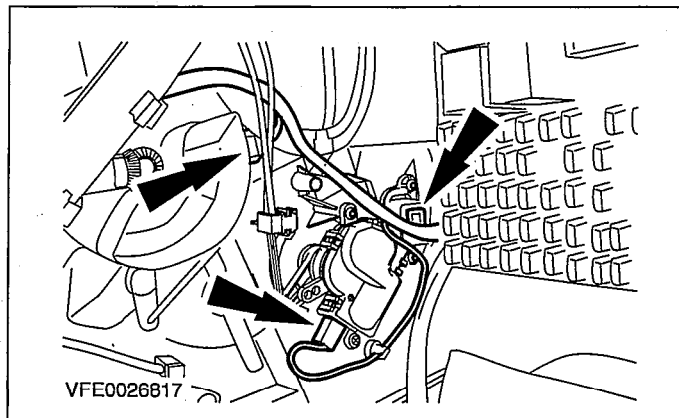
Vehicles with electronic automatic temperature control (EATC)

21. Disconnect the electrical connectors for the **footwell vent/duct** blend door actuator and the temperature blend door actuator.



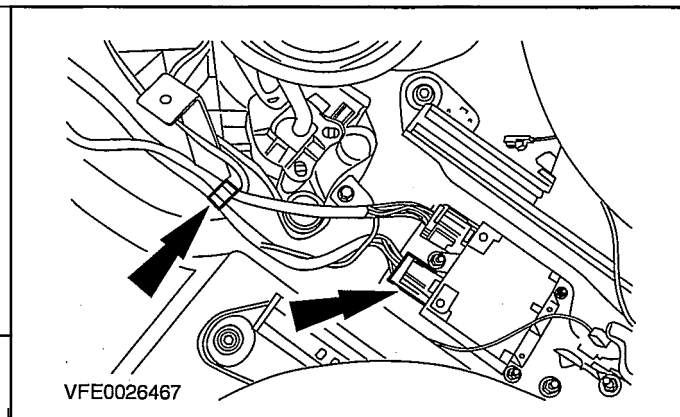
All vehicles

22. Disconnect the electrical connectors for the blower motor, blower motor resistor and air inlet blend door actuator.

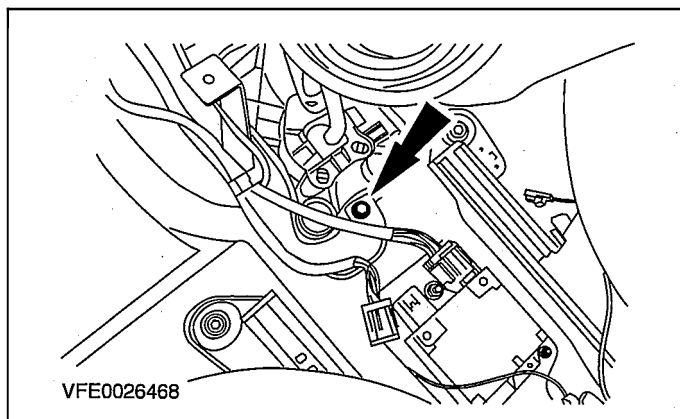


23. Disconnect the electrical connector from the **airbag** module.

- Unclip the wiring harness.

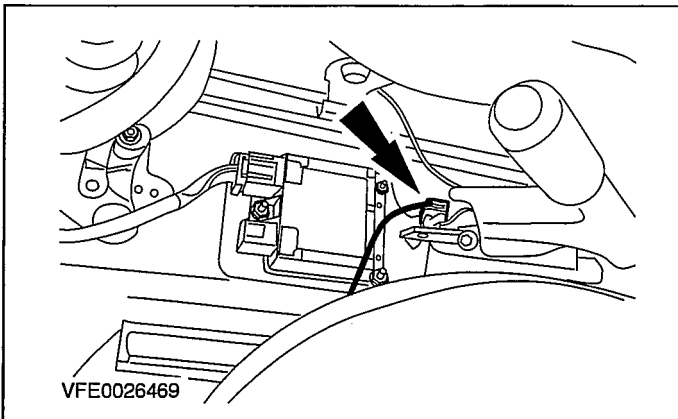


24. Unscrew and remove the ground cable bolt from the **airbag** module.

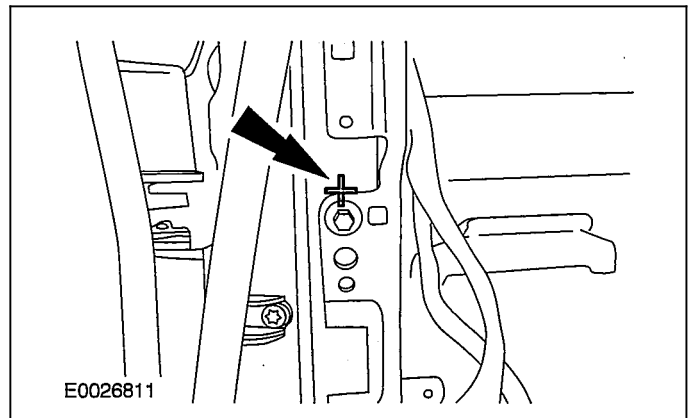


REMOVAL AND INSTALLATION

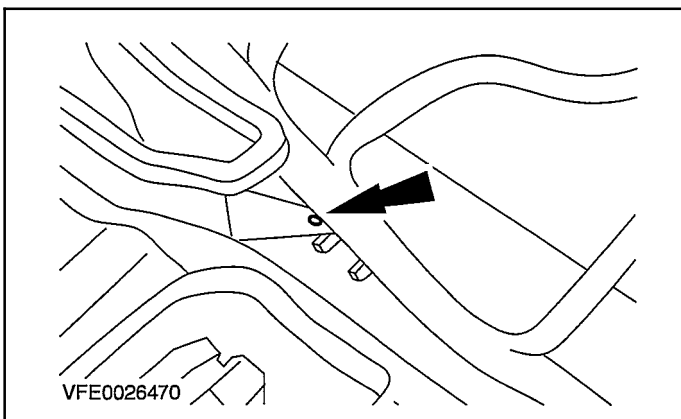
25. Disconnect the electrical connector of the handbrake warning lamp switch.



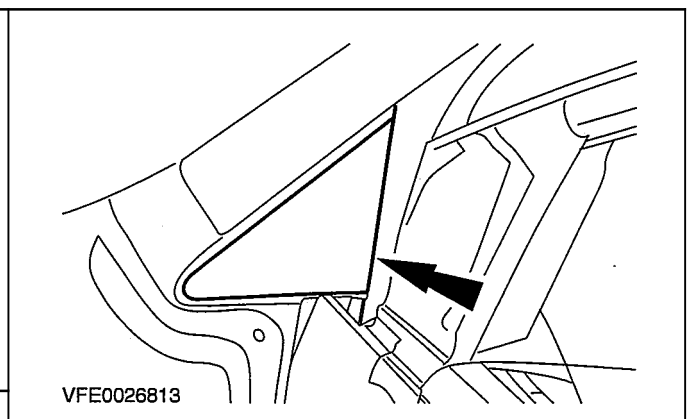
28. Mark the position of the in-vehicle crossbeam relative to the A-pillars (left-hand side shown).



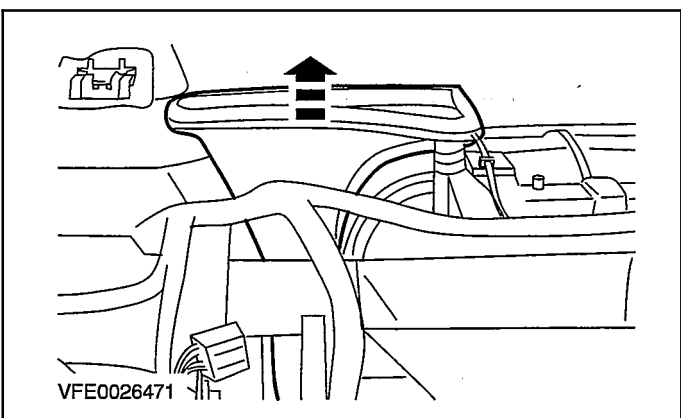
26. Remove the bolts of the windshield air duct (left-hand side shown).



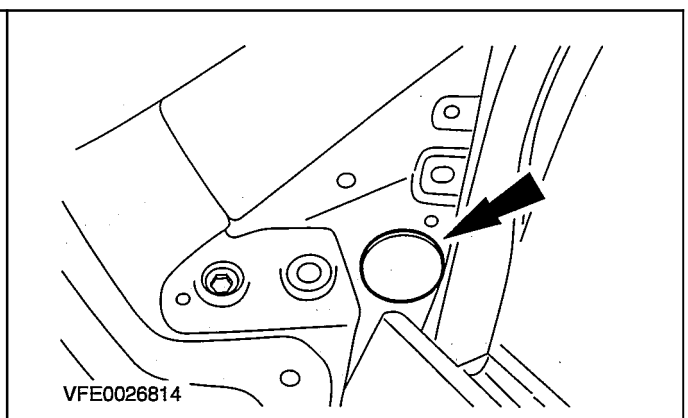
29. Remove the A-pillar outer trims (left-hand side shown).



27. Remove the windshield air ducts (left-hand side shown).

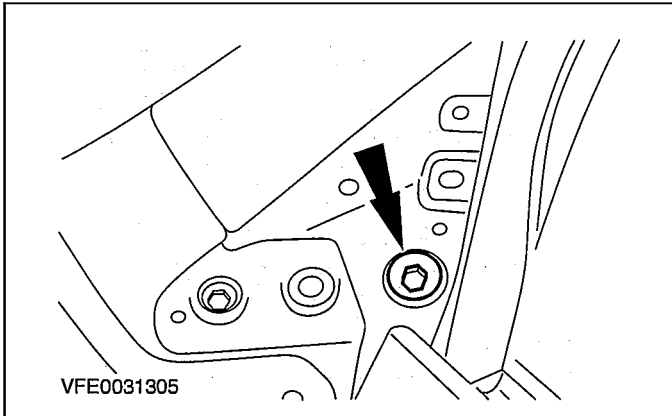


30. Remove the caps (left side shown).

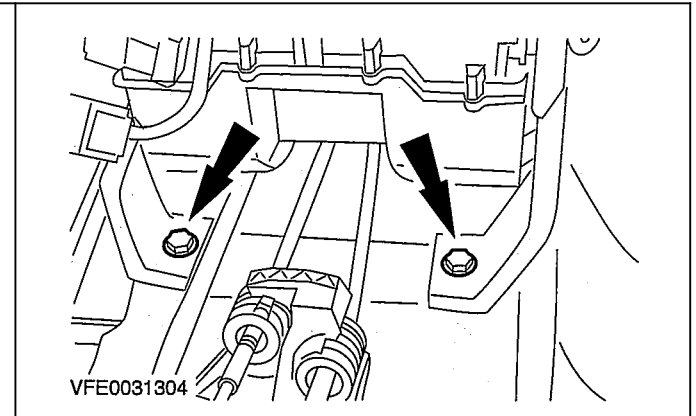


REMOVAL AND INSTALLATION

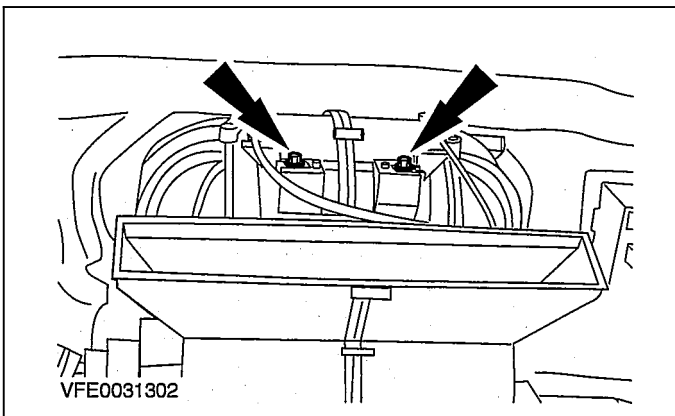
31. Remove the in-vehicle crossbeam side bolts.



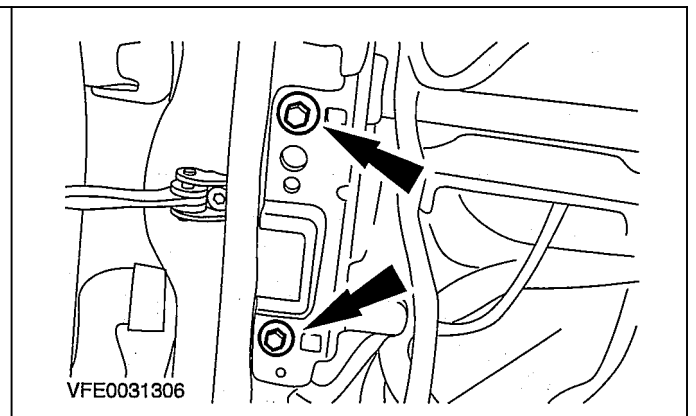
34. Remove the in-vehicle crossbeam lower bolts.



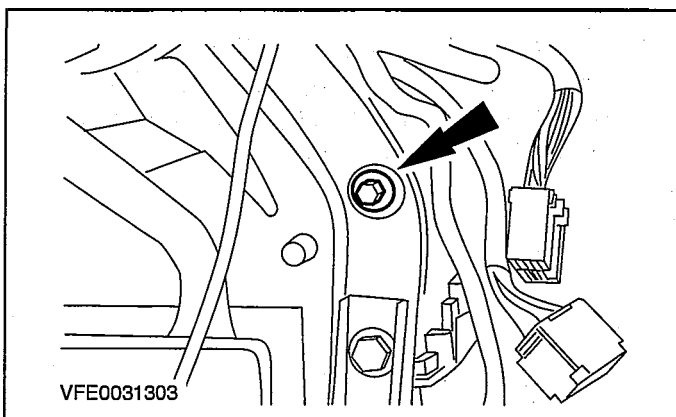
32. Remove the upper bolts of the heater core and evaporator core housing.



35. Remove the in-vehicle crossbeam upper bolts.

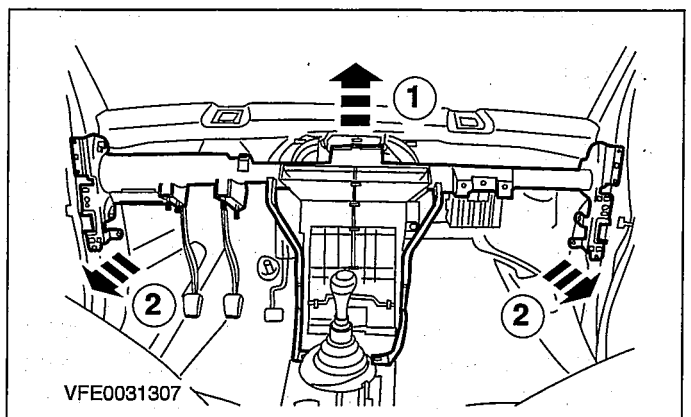


33. Remove the side bolts from the heater core and evaporator core housing (left side shown).



36. Remove the in-vehicle crossbeam.

1. Lift the in-vehicle crossbeam.
2. Pull the in-vehicle crossbeam rearwards.

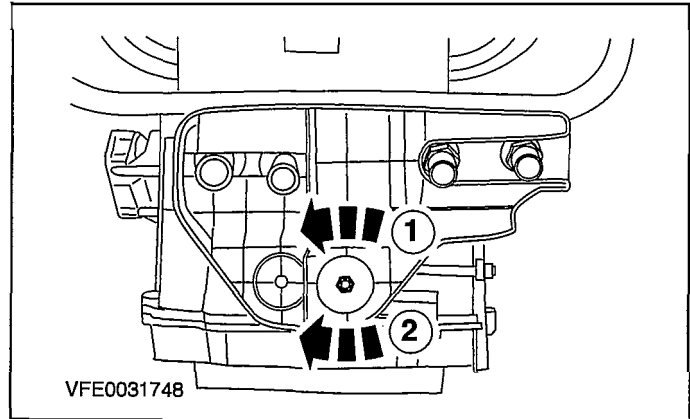
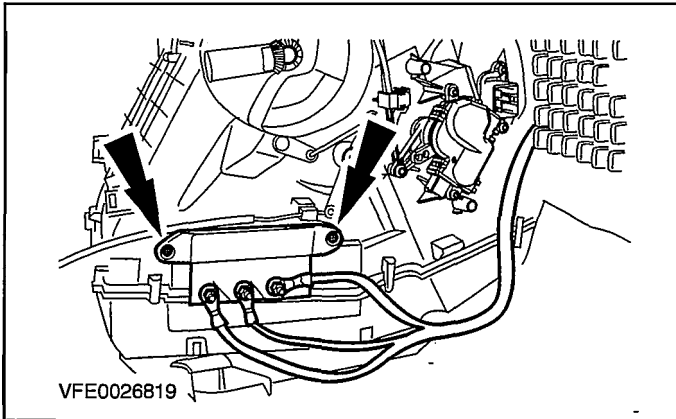


37. **▲WARNING:** Before performing any work on the electrical booster heater, make certain that the surface of its heating element has cooled to ambient temperature. Failure to observe this instruction can lead to injury.

REMOVAL AND INSTALLATION

Detach the electrical booster heater from the heater core and evaporator core housing and lay it to one side (if equipped).

2. Undo the adjustment nut one turn.

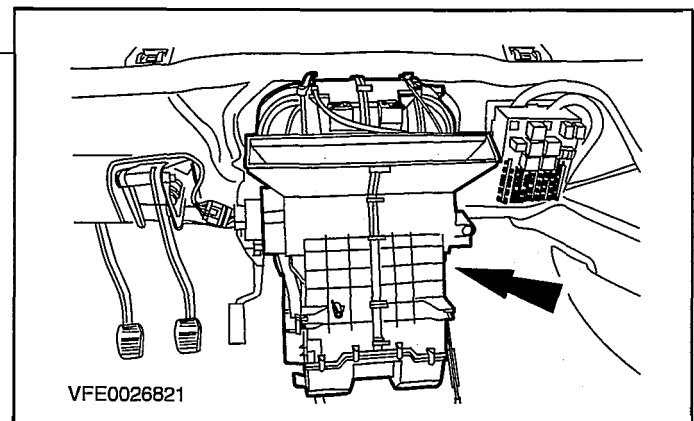
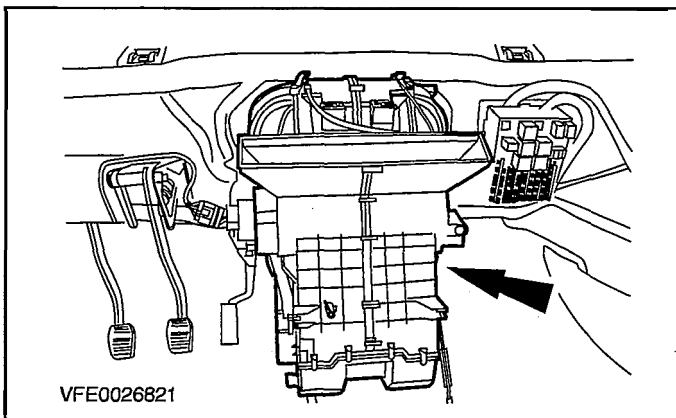


38. **CAUTION:** Make sure that the water drain tube is not damaged when laying down the housing.

Remove the heater core and evaporator core housing.

2. **CAUTION:** Make certain that the rubber grommet of the heater core and evaporator core housing water drain tube is correctly located in the vehicle floor.

Install the heater core and evaporator core housing.



installation

All vehicles

1. **CAUTION:** Ensure that the adjustment nut for the heater core and evaporator core housing is freely accessible.

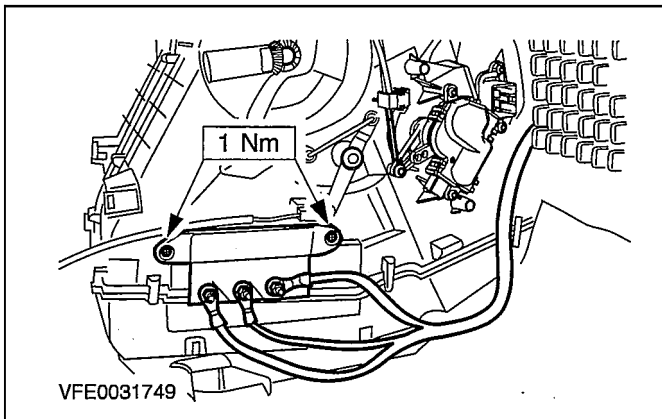
Screw on the adjustment nut for the heater core and evaporator core housing (the heater core and evaporator core housing seal is shown removed for clarity).

■ Tighten the adjustment nut to the stop.

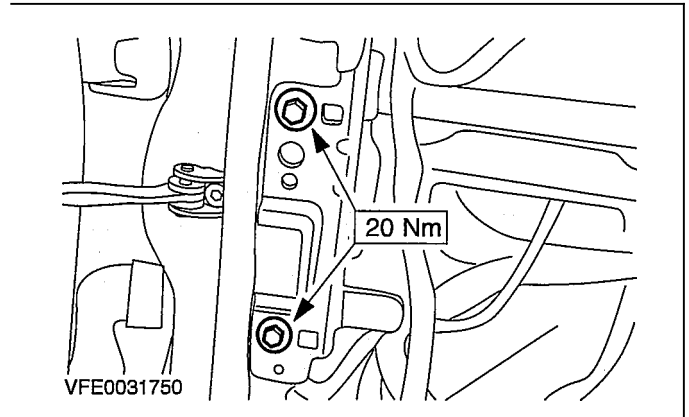
3. **CAUTION:** Ensure that the rubber grommet for the wiring harness of the electrical additional heater is correctly located in the bulkhead.

REMOVAL AND INSTALLATION

Attach the electrical additional heater to the heater core and evaporator core housing (if equipped).

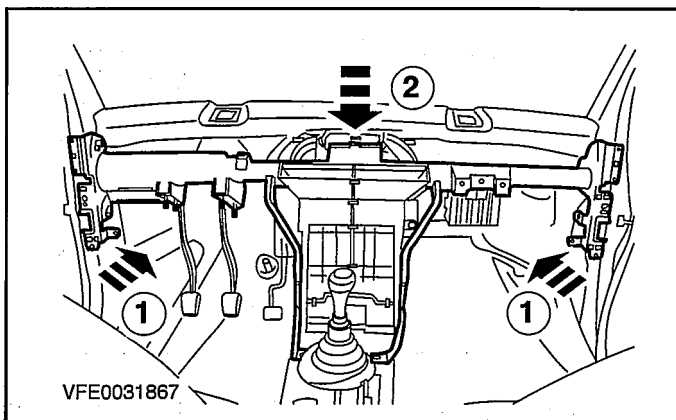


6. Install the upper bolts on the in-vehicle crossbeam.

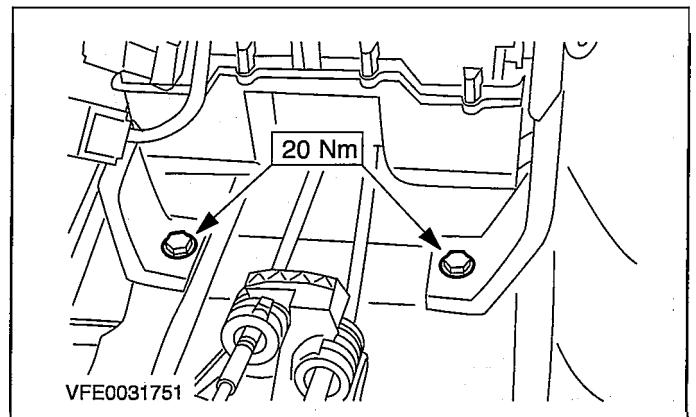


4. Install the in-vehicle crossbeam.

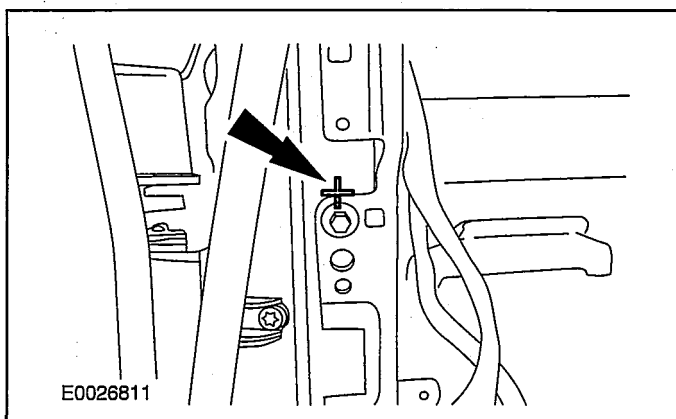
1. Slide the in-vehicle crossbeam forwards.
2. Lower the in-vehicle crossbeam.



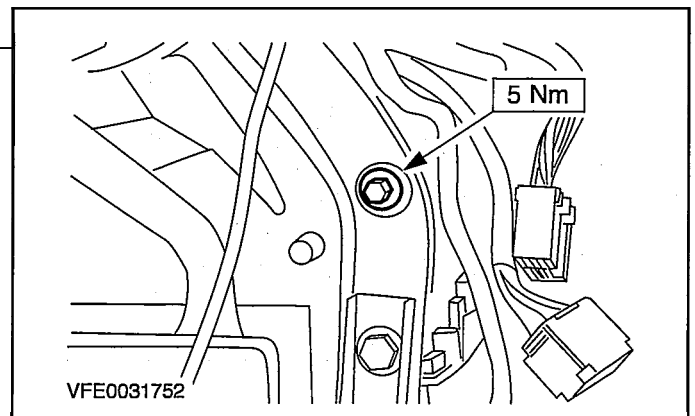
7. Install the lower bolts on the in-vehicle crossbeam.



5. Align the in-vehicle crossbeam to the A-pillars (left-hand side shown).

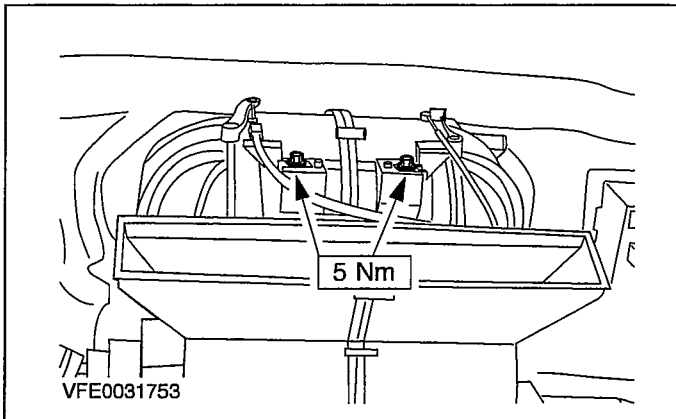


8. Install the side bolts on the heater core and evaporator core housing (left-hand side shown).

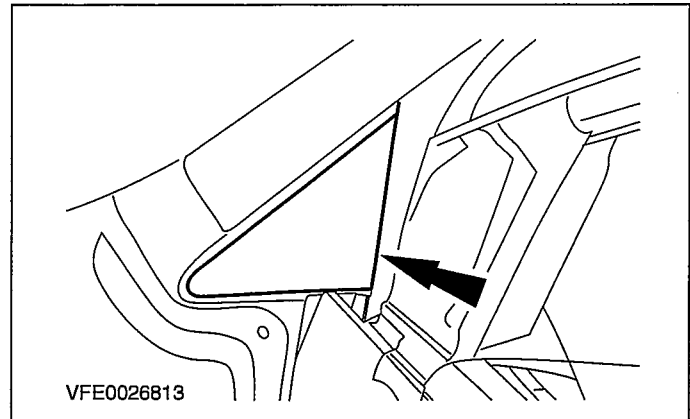


REMOVAL AND INSTALLATION

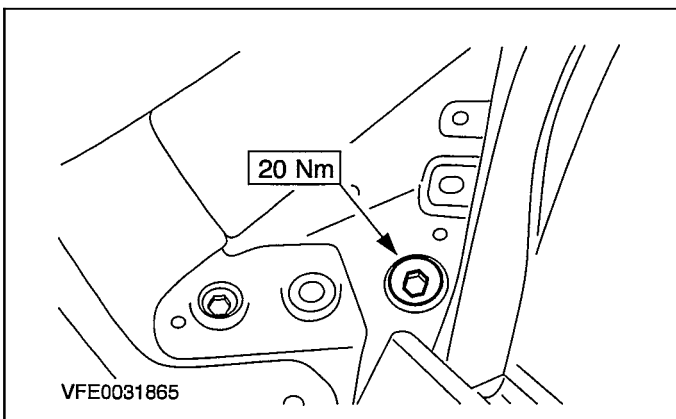
9. Install the upper bolts on the heater core and evaporator core housing.



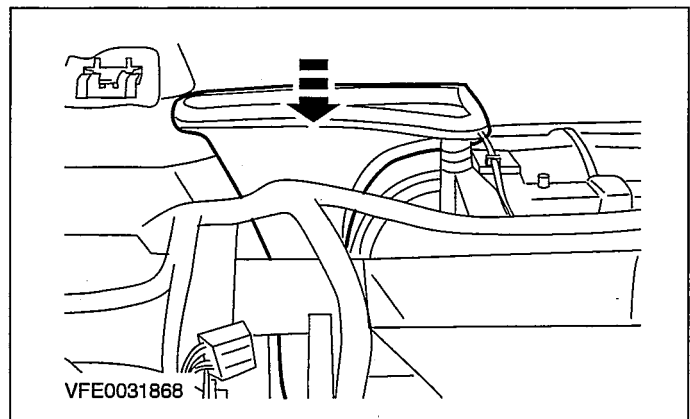
12. Install the outer A-pillar trims (left-hand side shown).



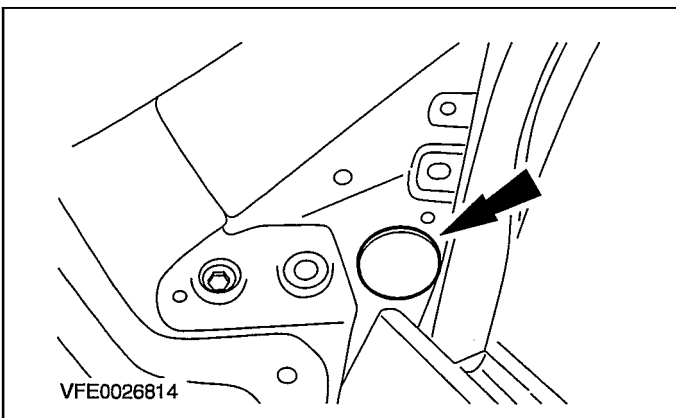
10. Install the side bolts on the in-vehicle crossbeam.



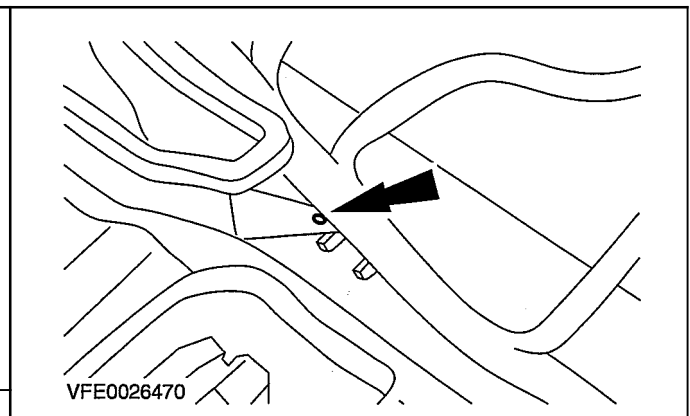
13. Install the windshield air ducts (left-hand side shown).



11. Install the caps (left-hand side shown).

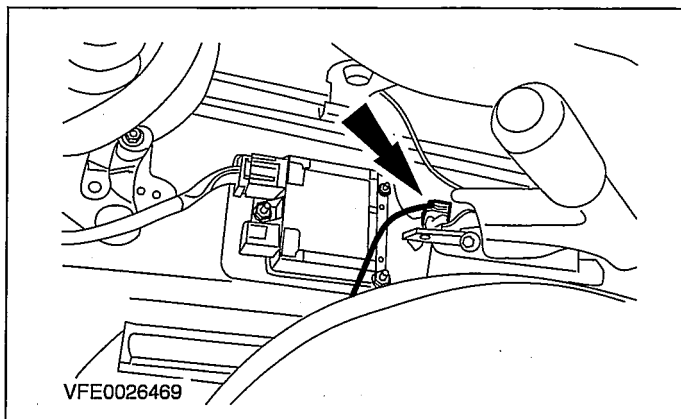


14. Install the bolts of the windshield air ducts (left-hand side shown).

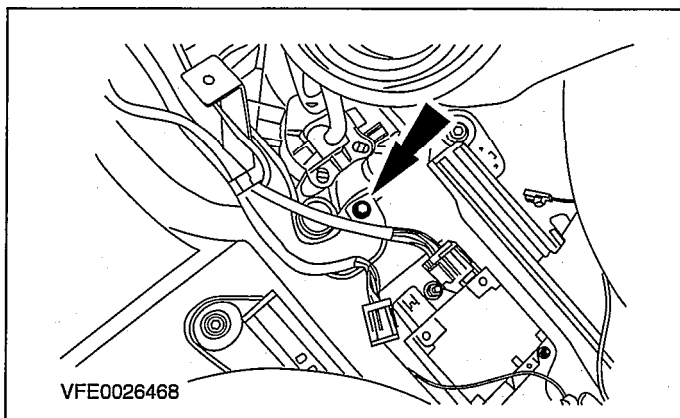


REMOVAL AND INSTALLATION

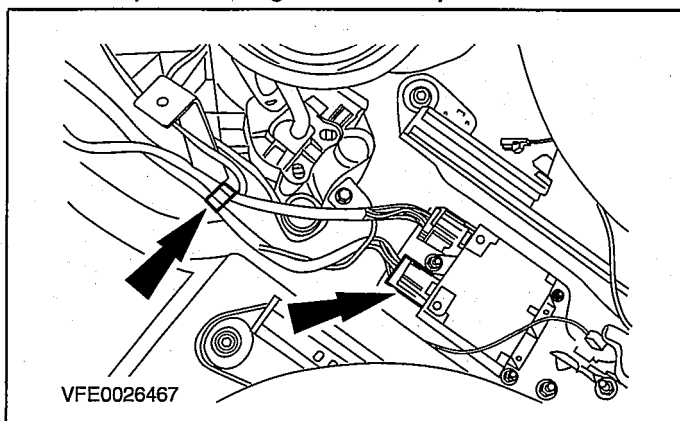
15. Connect the electrical connector of the handbrake warning lamp switch.



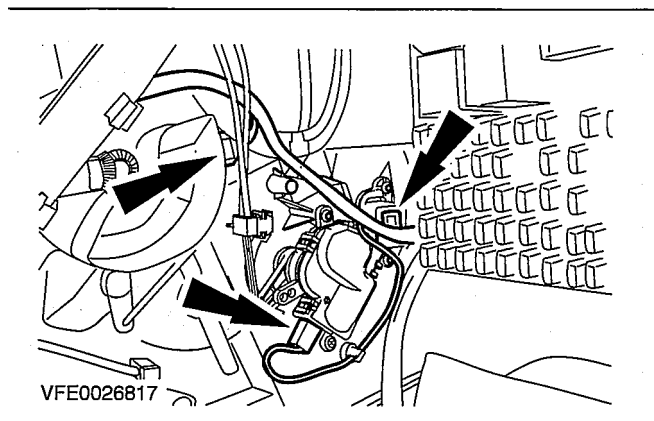
16. Install the ground cable bolt for the **airbag** module.



17. Connect the **airbag** module connector.
- Clip the wiring harness in place.

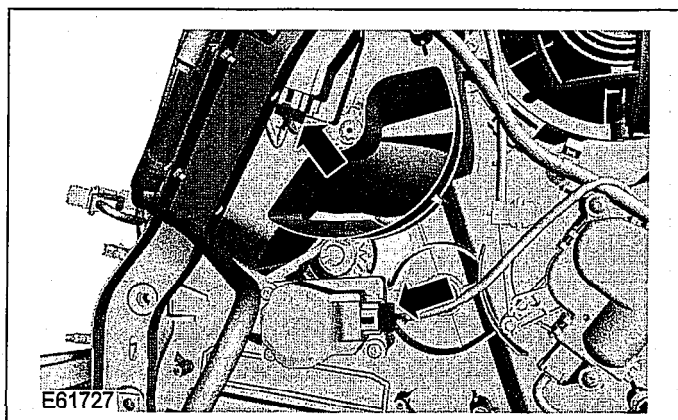


18. Connect the electrical connectors for the blower motor, the blower motor resistor and the air inlet blend door actuator.



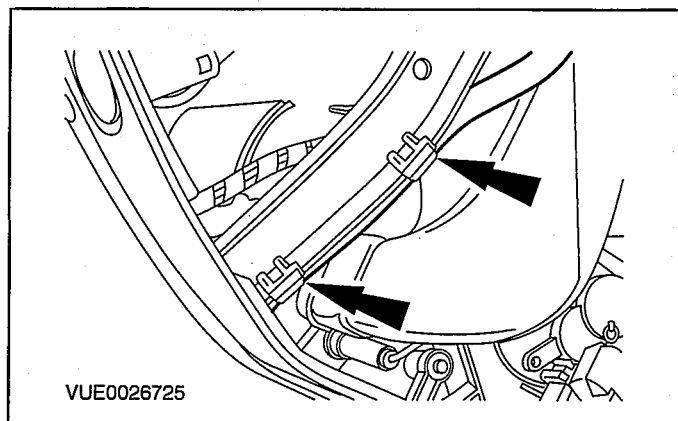
Vehicles with electronic automatic temperature control (EATC)

19. Connect the electrical connectors for the **footwell vent/duct** blend door actuator and the temperature blend door actuator.



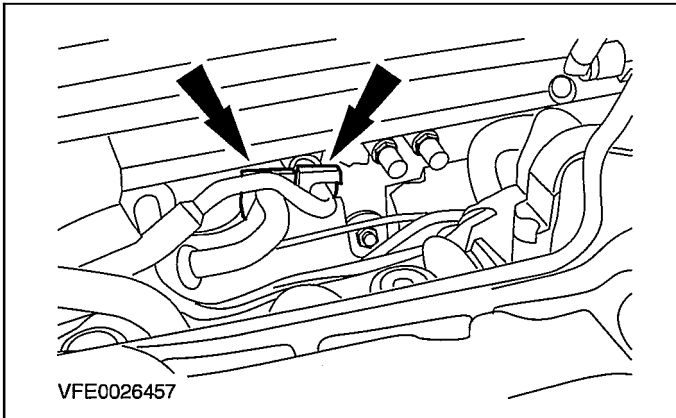
All vehicles

20. Attach the antenna cable to the middle clips on the in-vehicle crossbeam.

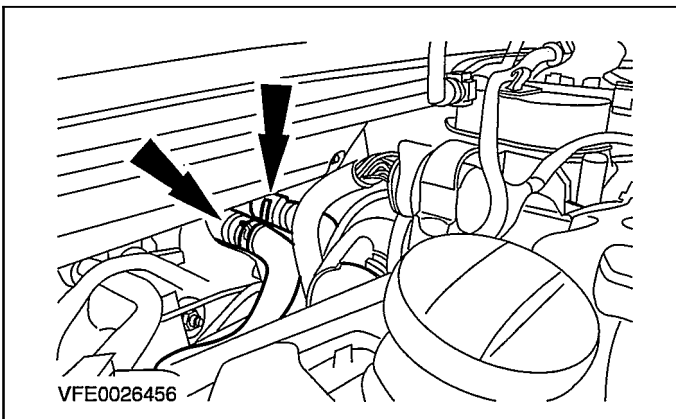


REMOVAL AND INSTALLATION

33. **Install** the retaining **clips** on the **quick-release couplings** on the refrigerant lines.



34. Attach the **coolant** hoses to the heater core.



35. **Install** the air cleaner. For additional information, refer to: (303-12 Intake Air Distribution and Filtering)

Air Cleaner - 1.25L Duratec-16V (Sigma)/1.4L Duratec-I6V (Sigma)/1.6L Duratec-16V (Sigma) (Removal and Installation),

Air Cleaner - 1.4L Duratorq-TDCi (DV) Diesel (Removal and Installation),

Air Cleaner - 2.0L Duratec-HE (M14) (Removal and Installation),

Air Cleaner - 1.6L Duratorq-TDCi (DV) Diesel (Removal and Installation).

36. **Install** the instrument panel.

For additional information, refer to:

Instrument Panel - Vehicles Built Up To: 1012005 (501-12 Instrument Panel and Console, Removal and Installation).

37. **Fill** the air conditioning system.

For **additional** information, refer to: Air Conditioning (A/C) System Recovery, Evacuation and Charging (412-00 **Climate Control System - General** Information, General Procedures).

38. **Install** the right-hand **headlamp** assembly.

For additional information, refer to:

Headlamp Assembly (417-01 Exterior Lighting, **Removal and Installation**).

39. **Fill** and bleed the **cooling** system. For additional information, refer to:

Cooling System Draining, Filling and Bleeding - 1.3L Duratec-8V (Rocam)/1.25L Duratec-I6V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-I6V (Sigma) (303-03 Engine Cooling - 1.3L Duratec-8V (Rocam)/1.25L Duratec-I6V (Sigma)/1.4L Duratec-I6V (Sigma)/1.6L Duratec-16V (Sigma), General Procedures),

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 1.4L Duratorq-TDCi (DV) Diesel, General Procedures),

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 2.0L Duratec-HE (M14), General Procedures),

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 1.6L Duratorq-TDCi (DV) Diesel, General Procedures).

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 1.6L Duratorq-TDCi (DV) Diesel, General Procedures).

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 1.6L Duratorq-TDCi (DV) Diesel, General Procedures).

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 1.6L Duratorq-TDCi (DV) Diesel, General Procedures).

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 1.6L Duratorq-TDCi (DV) Diesel, General Procedures).

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 1.6L Duratorq-TDCi (DV) Diesel, General Procedures).

Cooling System Draining, Filling and Bleeding (303-03 Engine Cooling - 1.6L Duratorq-TDCi (DV) Diesel, General Procedures).

DISASSEMBLY AND ASSEMBLY

Heater Core and Evaporator Core Housing

Disassembly

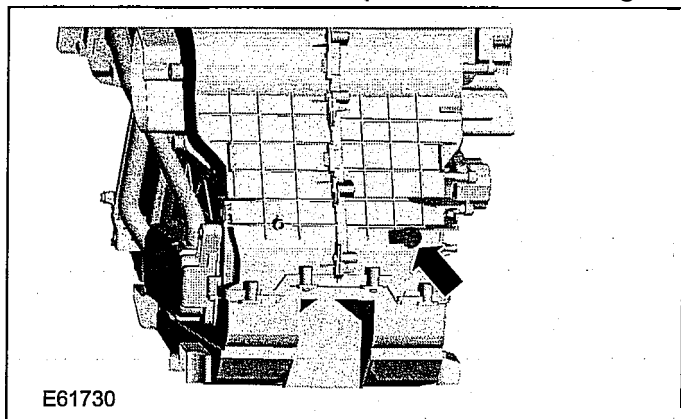
All vehicles

- Remove the heater core and evaporator core housing.

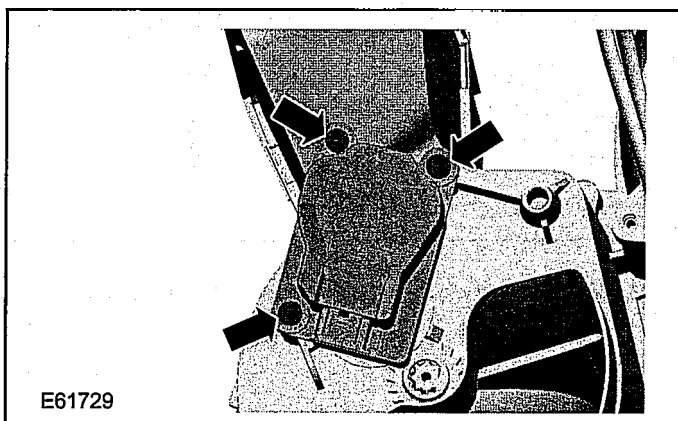
For additional information, refer to: Heater Core and Evaporator Core Housing (412-02 Heating and Ventilation, Removal and Installation).

Vehicles with electronic automatic temperature control (EATC)

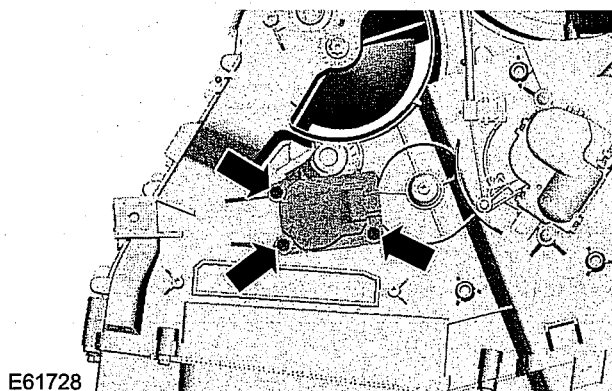
2. Remove the **footwell** air discharge temperature sensor.
 - Rotate the sensor in a clockwise direction through 90 degrees and pull it out of the heater core and evaporator core housing.



3. Remove the **footwell** vent/duct blend door actuator.

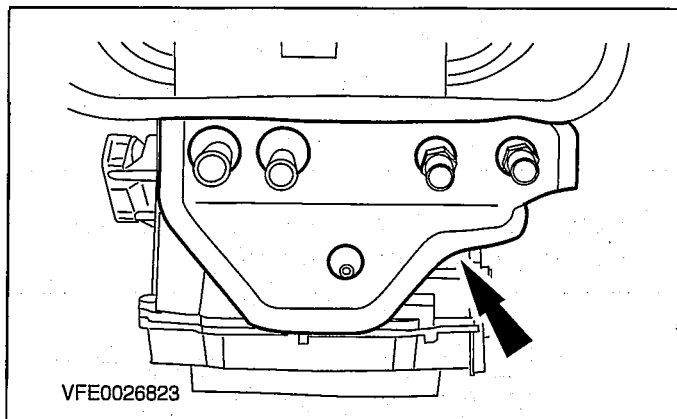


4. Remove the temperature blend door actuator.

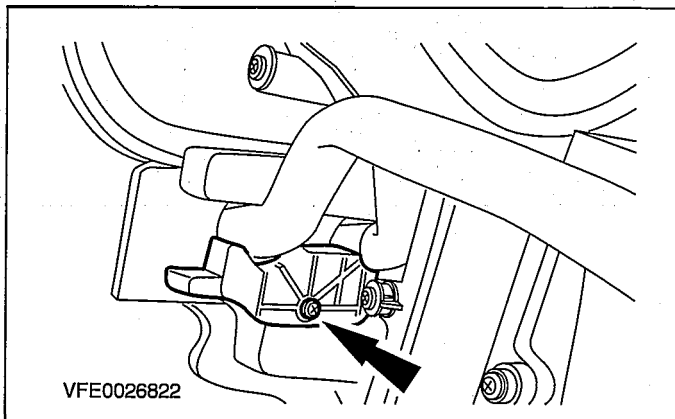


All vehicles

5. Remove the heater core and evaporator core housing gasket.

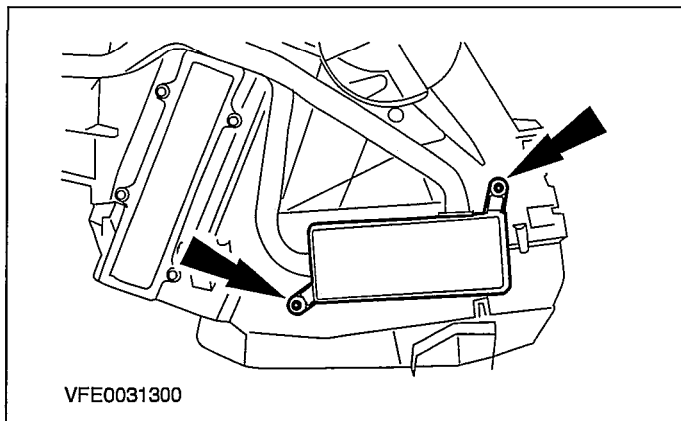


6. Remove the bracket for the coolant pipes.

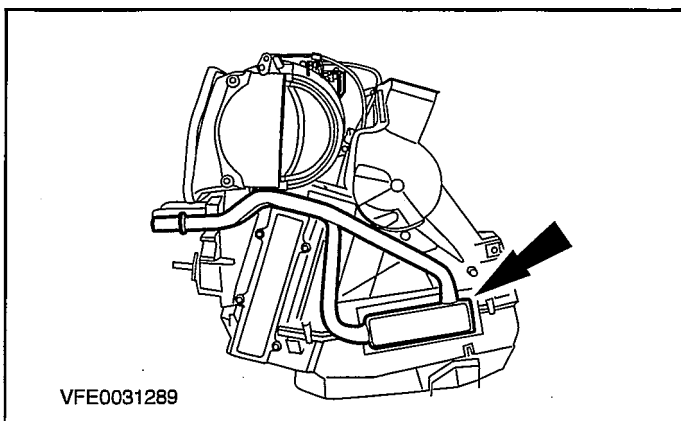


DISASSEMBLY AND ASSEMBLY

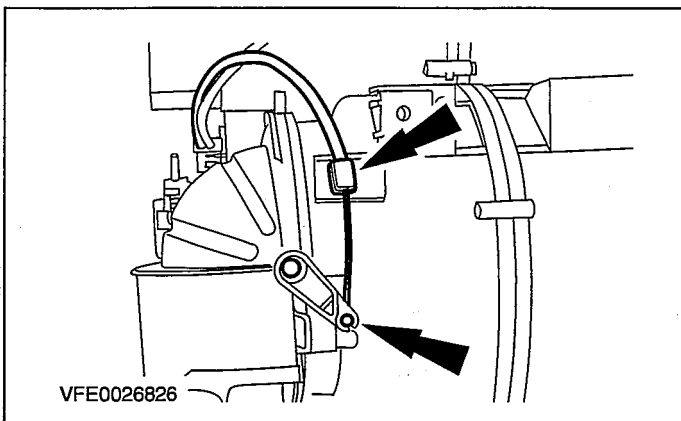
7. Remove the heater core cover.



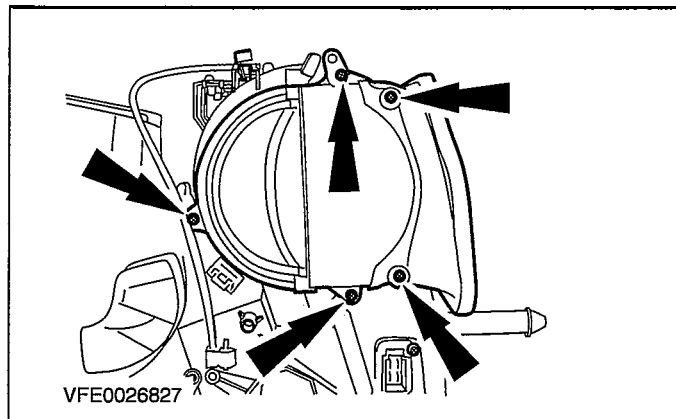
8. Remove the heater core.



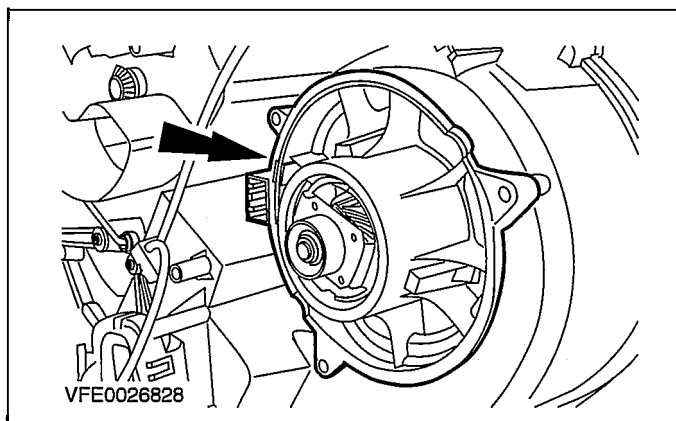
9. Detach the air inlet blend door operating cables (right-hand side shown).



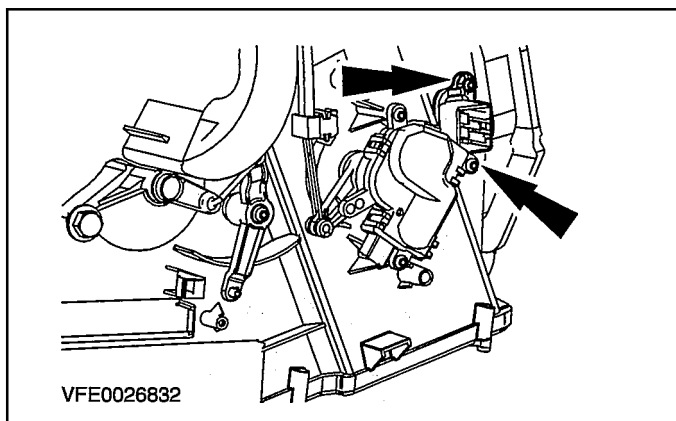
10. Remove the air inlet blend doors with the fresh air ducting (right-hand side shown).



11. Remove the blower motor.



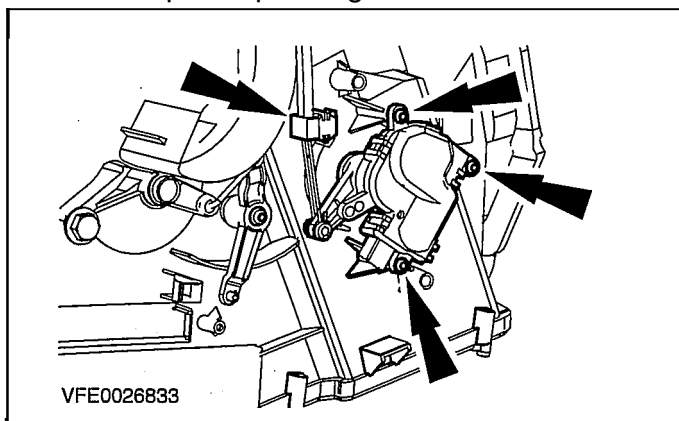
12. Remove the blower motor resistor.



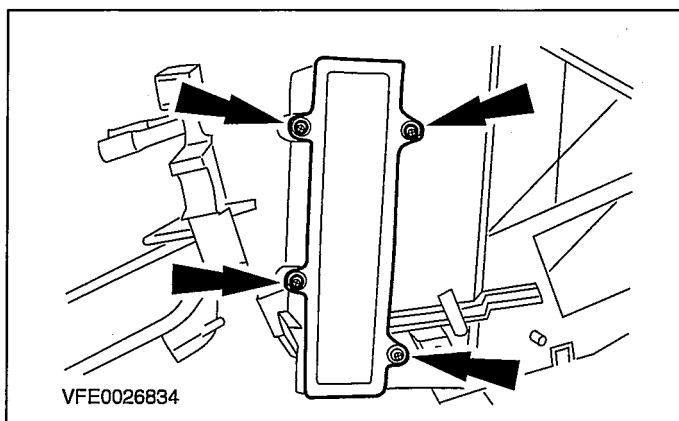
13. Remove the air inlet blend door actuator.

DISASSEMBLY AND ASSEMBLY

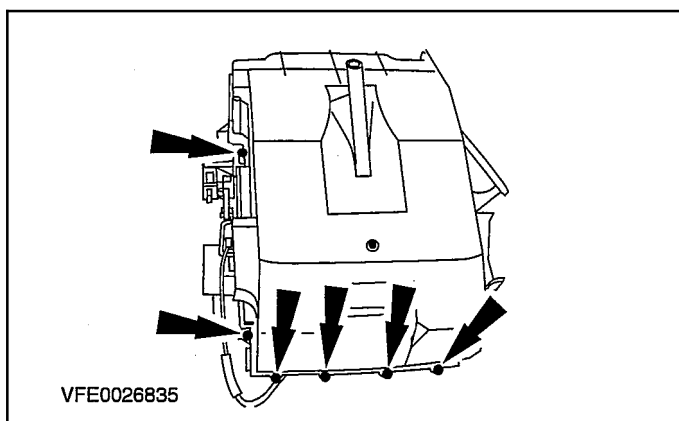
- Unclip the operating cables.



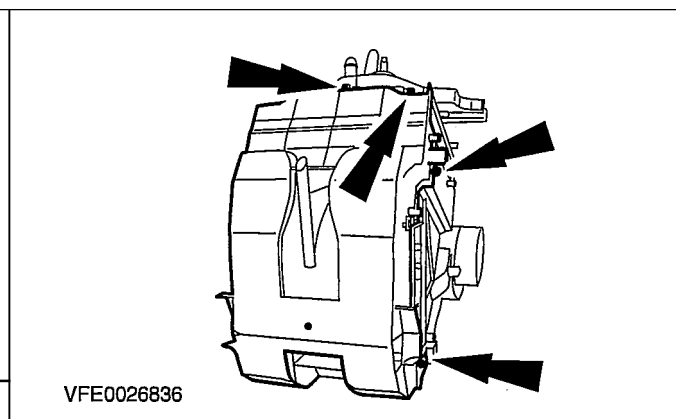
14. Remove the pollen filter housing cover.



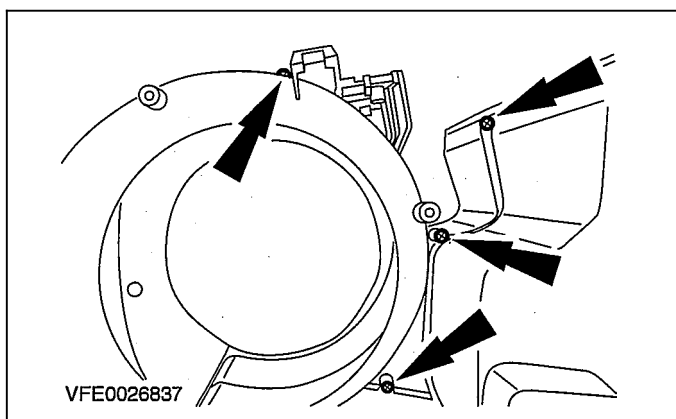
15. Remove the bolts of the heater core and evaporator core lower housing.



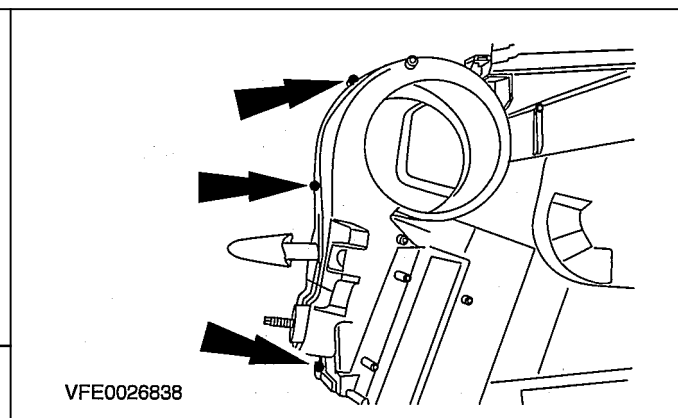
16. Remove the heater core and evaporator core lower housing.



17. Remove the upper bolts of the heater core and evaporator core housing.

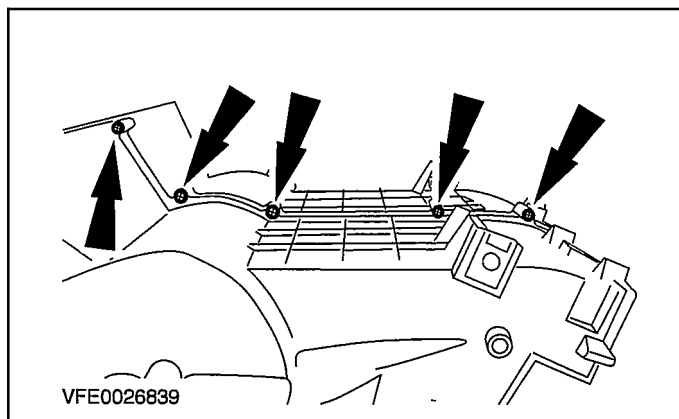


18. Remove the front bolts of the heater core and evaporator core housing.

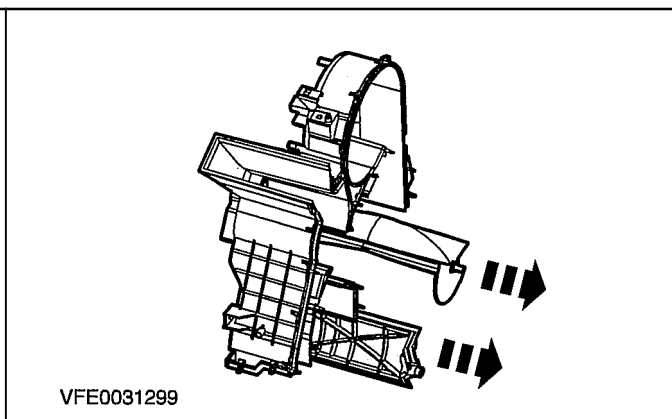


DISASSEMBLY AND ASSEMBLY

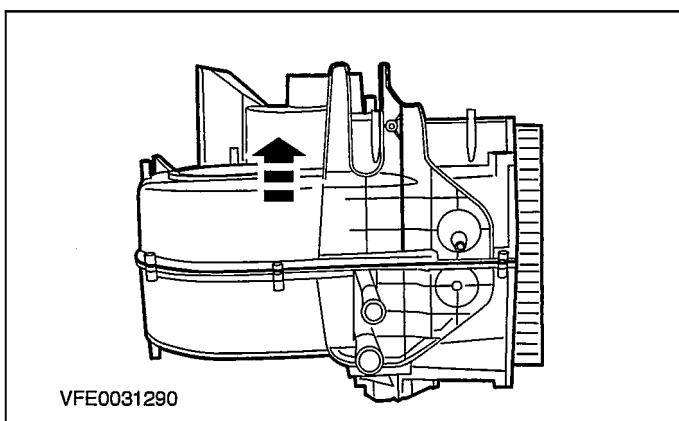
19. Remove the rear bolts of the heater core and evaporator core housing.



22. Remove the temperature blend door and the footwell vent/duct blend door.

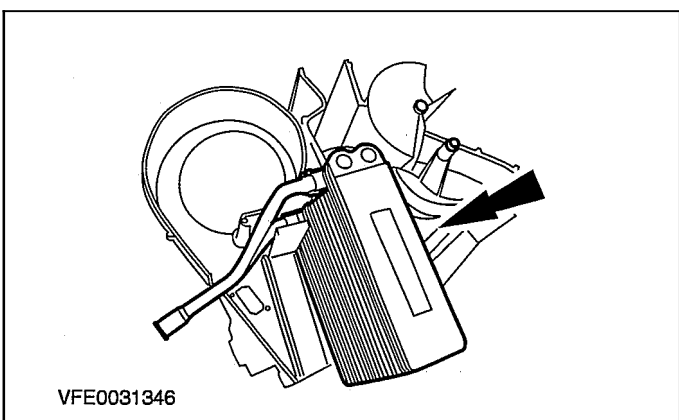


20. Separate the heater core and evaporator core housing.

**Assembly**

1. To assemble, reverse the disassemble procedure.

21. Remove the evaporator core.



SECTION 412-03 Air Conditioning

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SPECIFICATIONS	
Specifications.....	412-03-2
DESCRIPTION AND OPERATION	
Air Conditioning.....	412-03-3
Overview.....	412-03-3
DIAGNOSIS AND TESTING	
Air Conditioning.....	412-03-7
REMOVAL AND INSTALLATION	
Clutch and Clutch Field Coil.....	(34 628 0) 412-03-8
Evaporator Core.....	(34 622 4) 412-03-10
Evaporator Core Orifice.....	(34 624 4) 412-03-13
Low-Pressure Cutoff Switch.....	(34 629 0) 412-03-16
High-pressure Cutoff Switch.....	(34 631 0) 412-03-17
Condenser Core.....	(34 632 4) 412-03-18
Suction Accumulator.....	(34 630 4) 412-03-20
Air Conditioning (A/C) Compressor — 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/2.0L Duratec-HE (MI4)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	(34 626 4) 412-03-22
Compressor Manifold and Tube Assembly.....	412-03-24
Condenser to Evaporator Line.....	(34 645 4) 412-03-26
Evaporator Outlet Line.....	(34 644 4) 412-03-28

SPECIFICATIONS**A/C compressor**

	Type
A/C compressor (vehicles with 1.4L Duratorq-TDCi (DV) diesel engine)	SD6V12 (Sanden)
A/C compressor (vehicles with 1.6L Duratorq-TDCi (DV) diesel engine)	SD7V16 (Sanden)
A/C compressor (vehicles with 1.25L Duratec-16V (Sigma)/1.3L Duratec-8V (Rocam)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma) petrol engine)	FVS 090
A/C compressor (vehicles with 2.0L Duratec-HE (MI4) petrol engine)	FS 10

Evaporator core orifice

	Colour/Type
Evaporator core orifice	Red/fixed
Evaporator core orifice (vehicles with 1.6L Duratorq-TDCi (DV) diesel engine)	Blue/fixed
Evaporator core orifice (vehicles with automatic transmission)	brown/variable

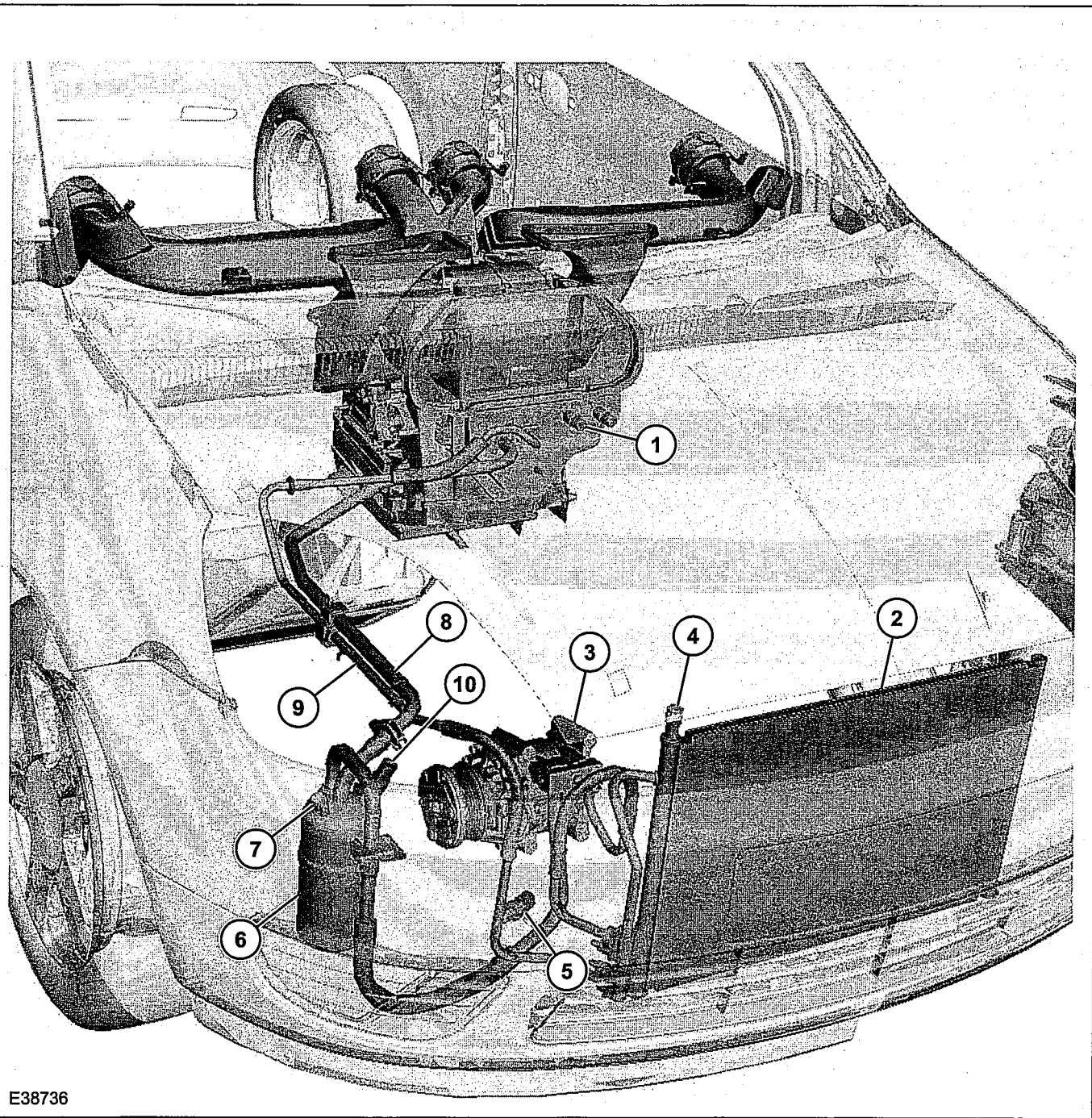
Tightening torques

Description	Nm	lb.ft	lb.in
Bolt, refrigerant line to A/C compressor	20	15	
Bolt, A/C compressor	20	15	
Bolt, A/C compressor drive plate	13	10	-
High-pressure cutoff switch	8	-	71
Low-pressure cutoff switch	2.5	-	23
Nut, refrigerant line to condenser	8		71
Bolt, accumulator/dehydrator	8	-	71
Nut, accumulator refrigerant line to A/C compressor	8	-	71
Nut, condenser to evaporator line	8	-	71

DESCRIPTION AND OPERATION

Air Conditioning

Overview



E38736

1.4L/1.6L Duratec 16V

Item	Description
1	Heater1 Evaporator Core Housing
2	Condenser
3	A/C compressor
4	High pressure charging connection

Item	Description
5	Air conditioning high-pressure switch
6	Suction accumulator
7	Low pressure charging connection
8	Evaporator core outlet pipe

DESCRIPTION AND OPERATION

Item	Description
9	Condenser-to-evaporator core pipe
10	Air conditioning low-pressure switch

The location of the components varies slightly depending on the engine version.

Vehicles with 1.25L, 1.3L, 1.4L or 1.6L petrol engines are equipped with an output-regulated spiral compressor (FVS 090).

Vehicles with 2.0L petrol engines are equipped with an unregulated piston compressor (FS 10).

Vehicles with 1.4L or 1.6L diesel engines are equipped with an output-regulated swash plate compressor (Sanden SD6V12 / SD7V16).

Vehicles with 1.6L diesel engines are equipped with a thinner condenser with a thickness of 12 mm compared to 16 mm. This results in modified air conditioning charging capacities, which can be found in the specification list in Group 412-00.

On vehicles with 1.6L diesel engines, the low-pressure filler connection is located in the evaporator core outlet pipe and is accessible without removing the right-hand headlamp.

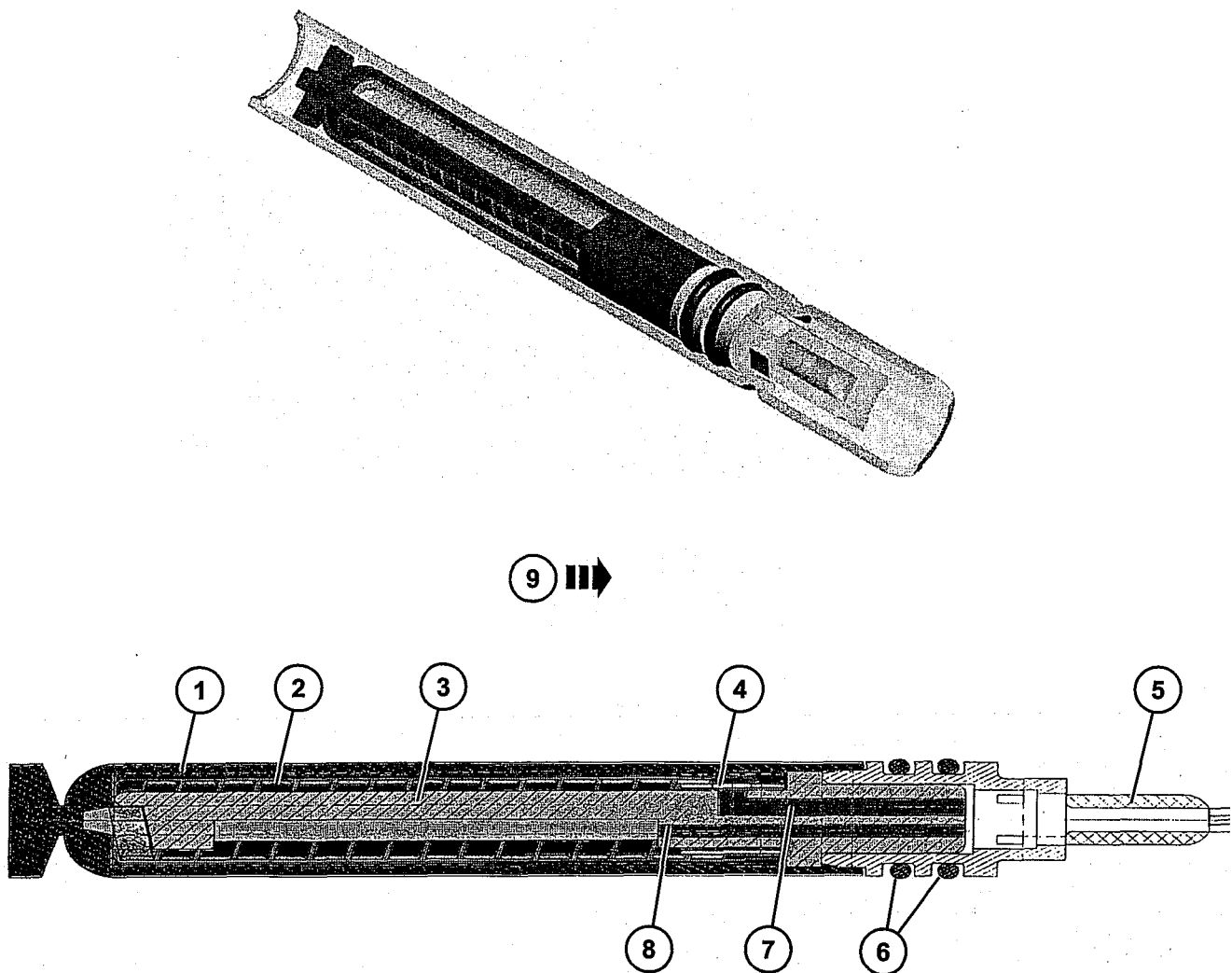
An evaporator core orifice is used for all engine versions with manual transmission.

Variable evaporator core orifice

A variable evaporator core orifice, which is located at the position of the evaporator core orifice in the condenser-to-evaporator core pipe, is used for engine versions with automatic transmission. This is necessary, as otherwise the lower idle speed (in position D) and the increased thermal radiation of the additional transmission fluid cooler affecting the condenser, would result in reduced cooling performance.

Generally, a high refrigerant temperature results in a narrow cross-section of the variable evaporator core orifice and thus an increased air conditioning cooling performance, particularly at idling speed.

DESCRIPTION AND OPERATION

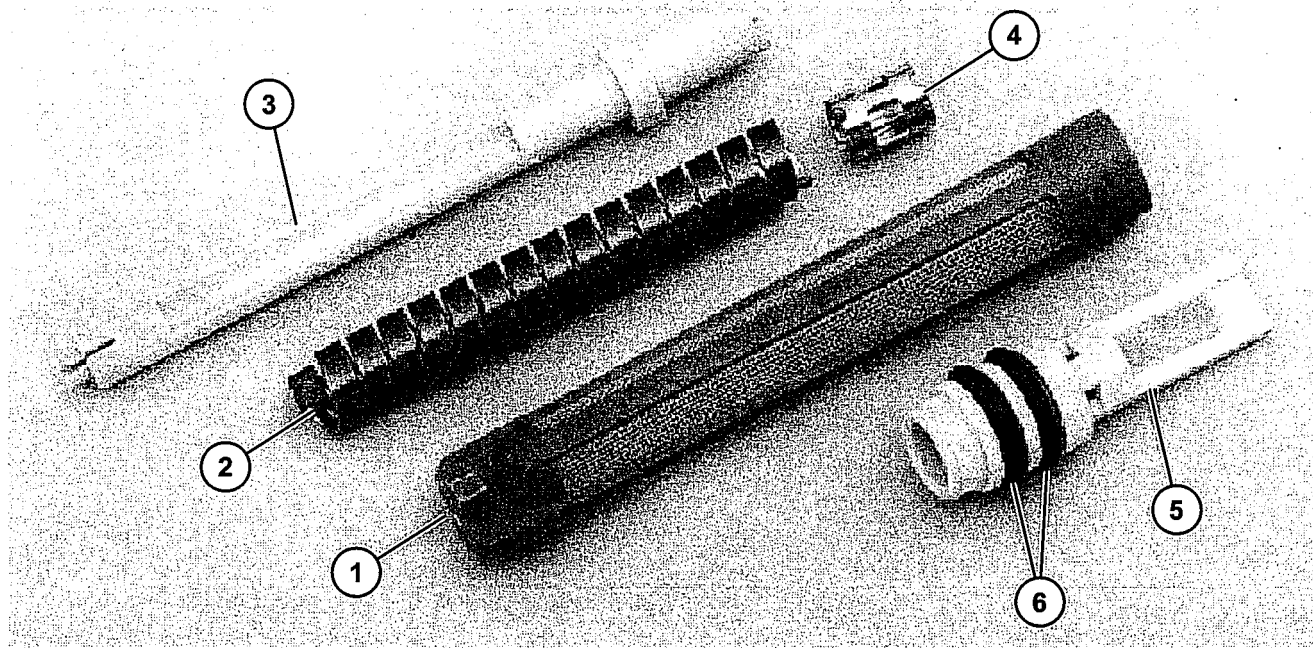


E58206

Item	Description
1	Filter
2	Bi-metal spring
3	Valve housing
	Metering orifice

Item	Description
5	Diffuser
6	O-ring seals
7	Variable orifice
8	Calibrated orifice
9	Direction of flow / installation direction

DESCRIPTION AND OPERATION



E58216

Item	Description
1	Filter
2	Bi-metal spring
3	Valve housing
4	Metering orifice
5	Diffuser
6	O-ring seals

In addition to a calibrated orifice with fixed flow rate, the valve housing features a variable orifice. The flow of refrigerant through the variable orifice is regulated by the refrigerant temperature. Depending upon temperature, the bi-metal spring turns the metering orifice, resulting in the variable orifice being opened to a greater or lesser degree and thus regulating the flow rate to the evaporator core.

DIAGNOSIS AND TESTING**Air Conditioning**

REFER to Section 412-00 [Climate Control System
- General Information].

REMOVAL AND INSTALLATION

Clutch and Clutch Field Coil(34 628 0)

Removal

All vehicles

1. Remove the auxiliary drive belt. For additional information, refer to: (303-05)

Accessory Drive Belt - **1.4L**

Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma), Vehicles With: Air Conditioning (Removal and Installation),

Accessory Drive Belt - **1.3L**

Duratec-8V (Rocam) (Removal and Installation),

Accessory Drive Belt - **1.4L**

Duratorq-TDCi (DV) Diesel (Removal and Installation),

Power Steering Pump Belt -

1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma), vehicles **With: Air Conditioning** (Removal and Installation),

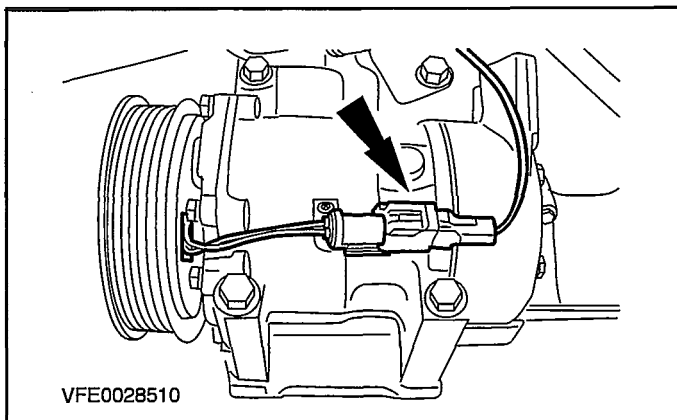
Accessory Drive Belt - **2.0L**

Duratec-HE (M14) (Removal and Installation),

Accessory Drive Belt - **1.6L**

Duratorq-TDCi (DV) Diesel (Removal and Installation).

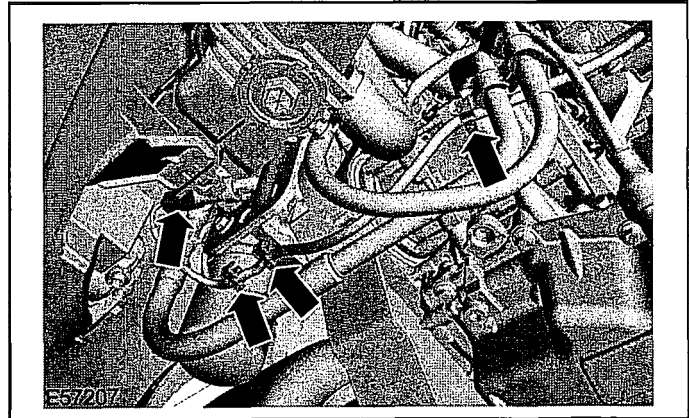
2. Detach the **A/C** compressor clutch connector.



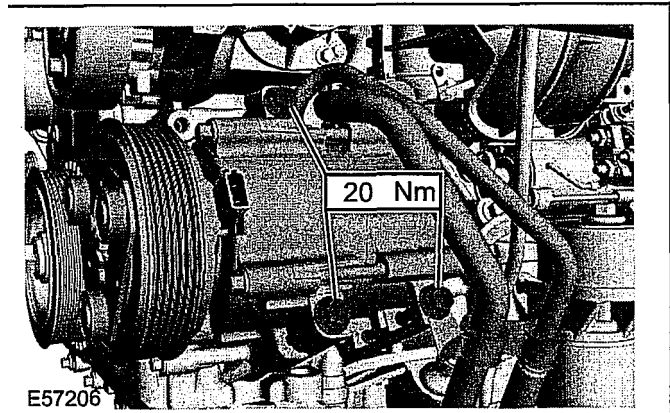
Vehicles with 2.0L engine

3. Disconnect the pressure cutoff switch electrical connector.

- Unclip the pressure cutoff switch wiring harness and lay it to the side.



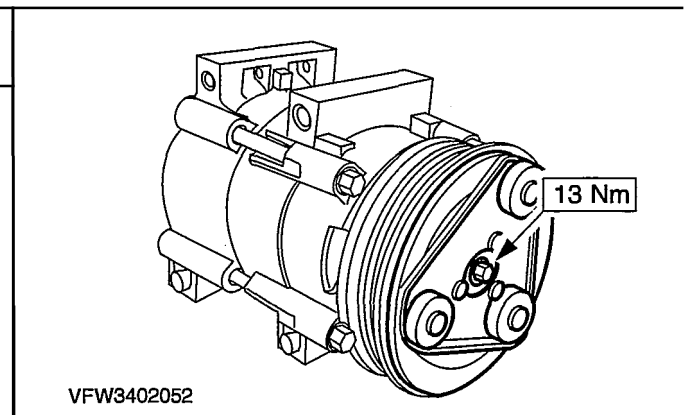
4. Detach the A/C compressor from the engine block, lower it and secure it at the side.



All vehicles

NOTE: Mark the installation position of the A/C compressor clutch connector in relation to the compressor housing.

5. Remove the **A/C** compressor driveplate (A/C compressor shown removed for clarity).

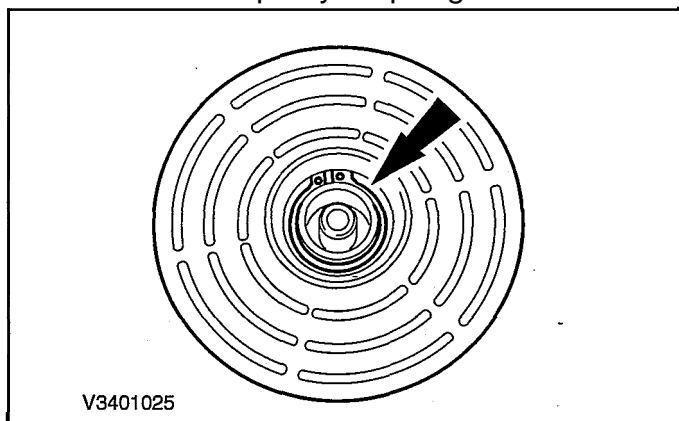


REMOVAL AND INSTALLATION

6. **NOTE:** If necessary, remove a seized **A/C** compressor pulley using a suitable remover.

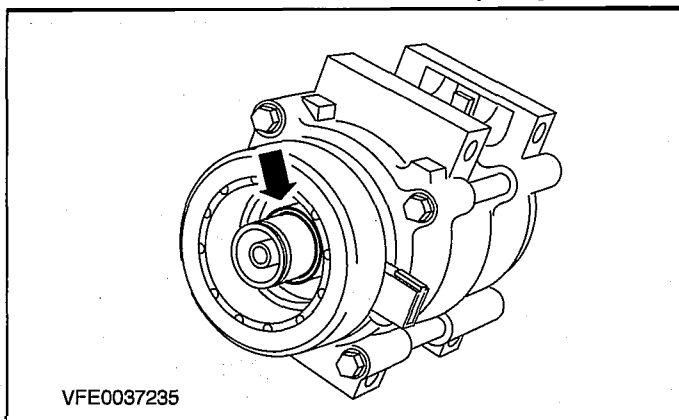
Remove the **A/C** compressor pulley.

- Remove the spacer washers.
- Discard the pulley snap ring.



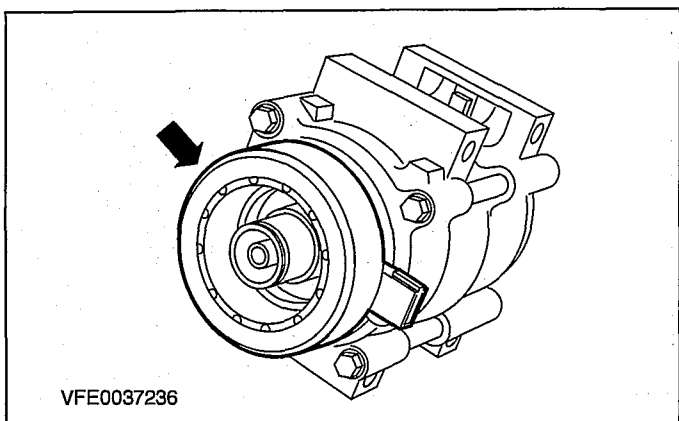
7. Remove the solenoid coil snap ring.

- Discard the solenoid coil snap ring.



8. **NOTE:** Mark the installation position of the **A/C** compressor clutch connector in relation to the compressor housing.

Remove the solenoid coil.

**Installation**

CAUTION: Do not skew the solenoid coil when installing in the **A/C** compressor.

NOTE: Installation position of the **A/C** compressor clutch connector in relation to the compressor housing.

NOTE: Install new snap rings on the **A/C** compressor pulley and the solenoid coil.

1. To assemble, reverse the disassembly procedure.
2. Check the **A/C** clutch air gap.

For additional information, refer to:
Air Conditioning (**A/C**) Clutch Air Gap Adjustment (412-00, General Procedures).

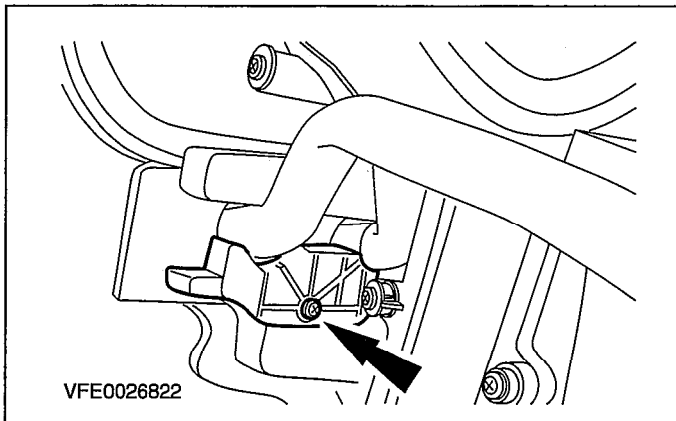
REMOVAL AND INSTALLATION

Evaporator Core(34 622 4)

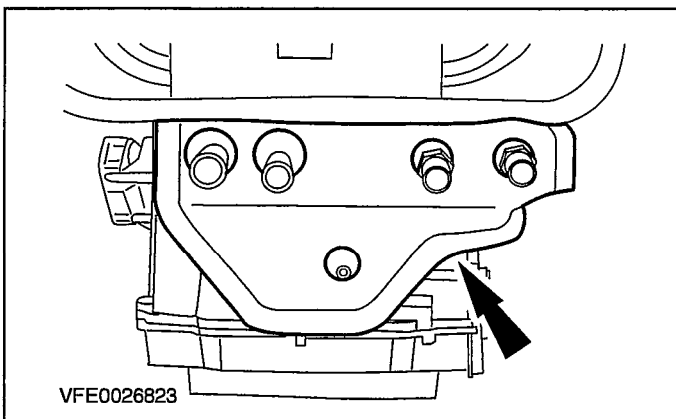
Removal

- Remove the heater core / evaporator housing. For additional information, refer to Section 412-02A [Heating and Ventilation] ■ 412-02B [Auxiliary Heating] / 412-02C [Auxiliary Climate Control].

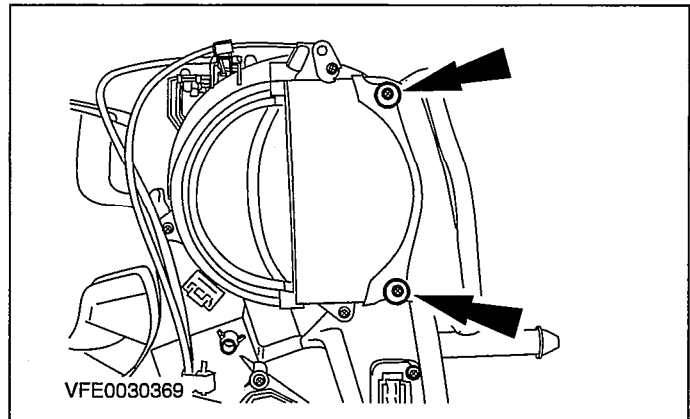
2. Remove the bracket for the coolant pipes.



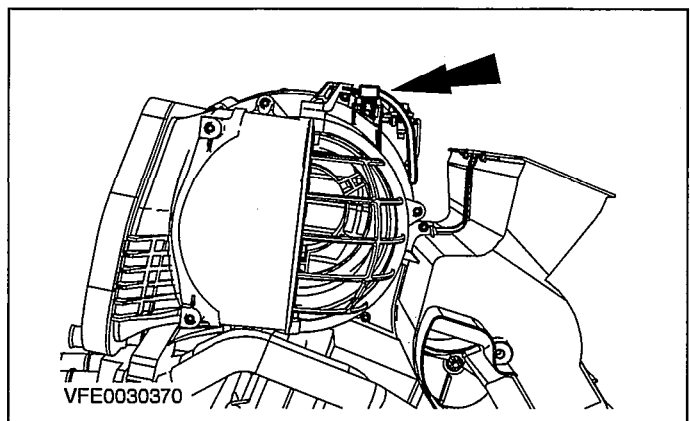
3. Remove the heater core / evaporator housing gasket.



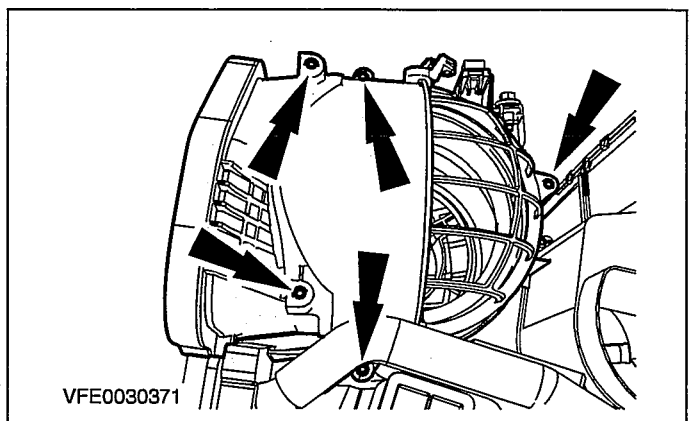
4. Remove the right-hand bolts of the fresh air duct.



5. Unclip the operating cable of the left-hand air inlet flap from the heater core / evaporator housing.

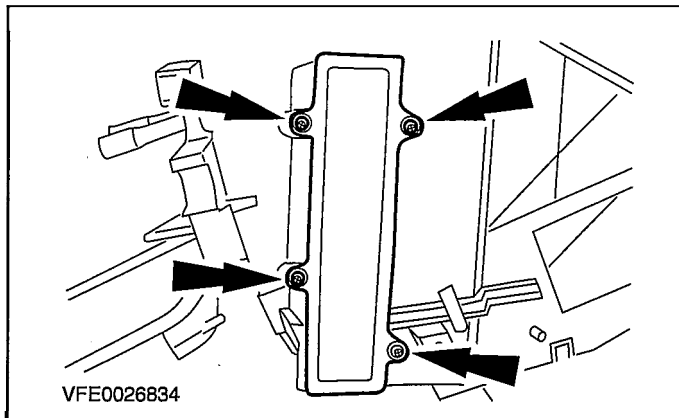


6. Detach the left-hand air inlet flap from the fresh air duct and lay it to one side.
 - Remove the fresh air duct.

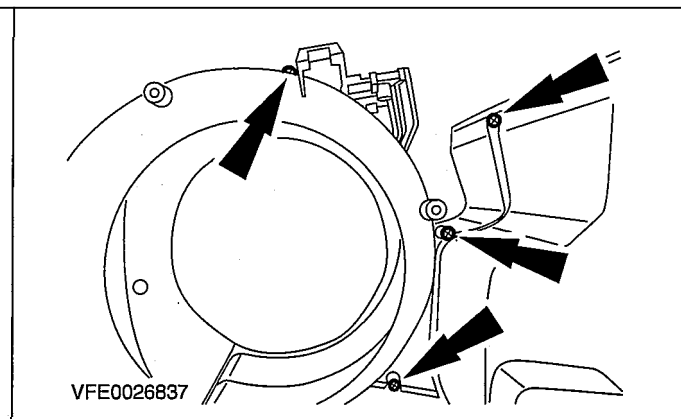


REMOVAL AND INSTALLATION

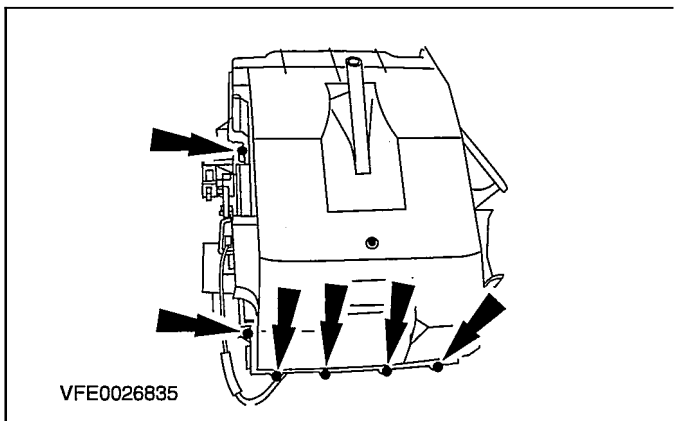
7. Remove the pollen filter housing cover.



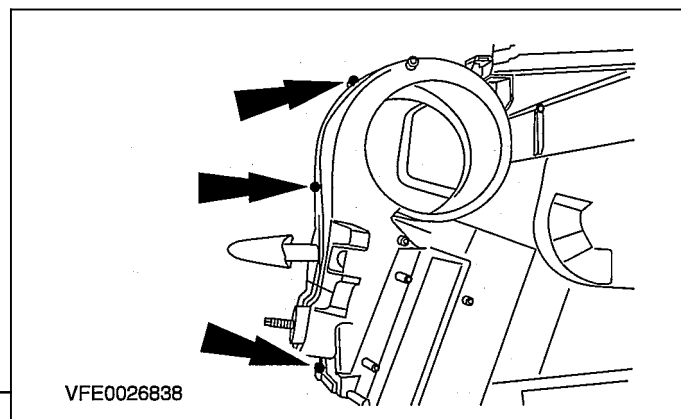
10. Remove the upper bolts of the heater core / evaporator housing.



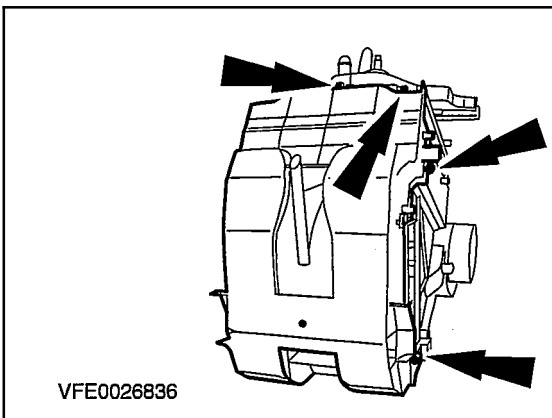
8. Remove the bolts of the heater core / evaporator lower housing.



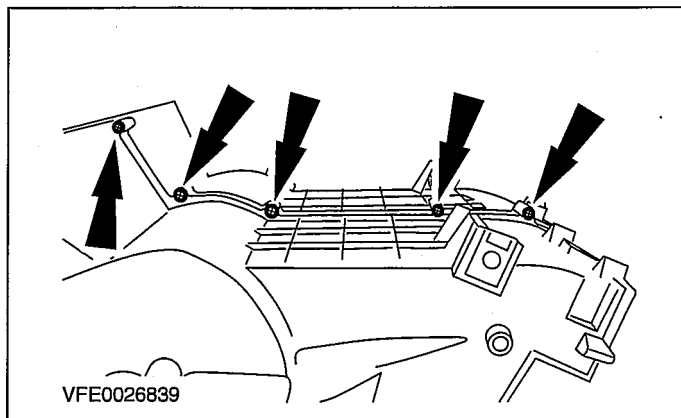
11. Remove the front bolts of the heater core / evaporator housing.



9. Remove the heater core / evaporator lower housing.

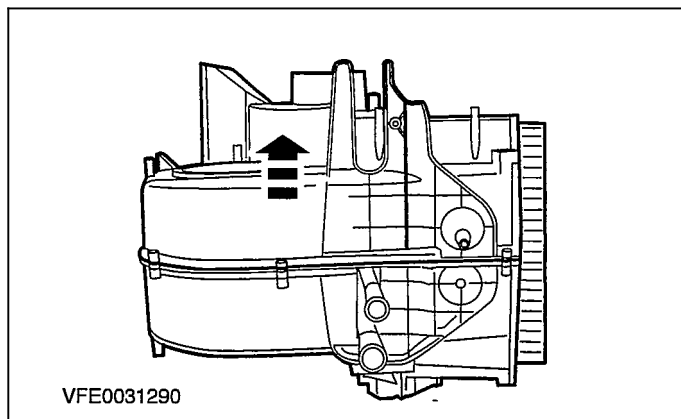


12. Remove the rear bolts of the heater core / evaporator housing.

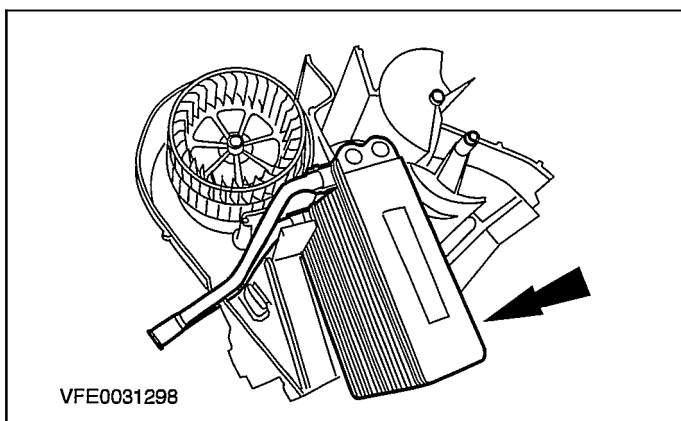


REMOVAL AND INSTALLATION

13. Separate the heater core / evaporator housing.



14. Remove the evaporator.

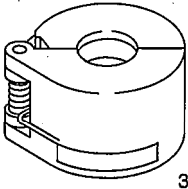
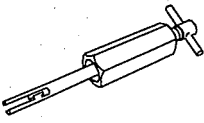
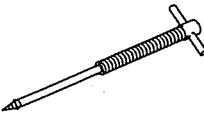
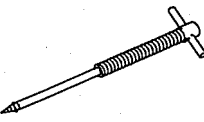
**Installation**

- _Reinstall the components in reverse order.

REMOVAL AND INSTALLATION

Evaporator Core Orifice(34 624 4)

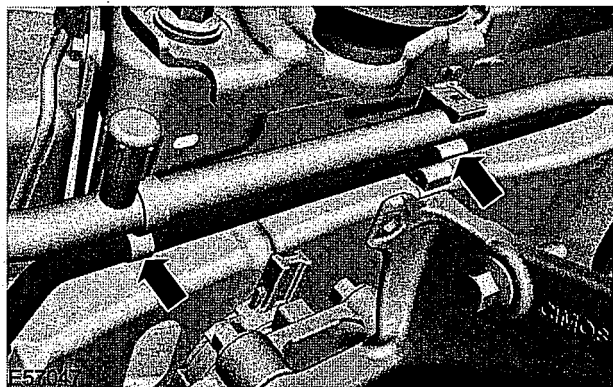
Special Tool(s)

 <p>34001</p>	<p>Remover, quick-release coupling 1/2" (blue) 412-027 (34-001)</p>
 <p>34004</p>	<p>Remover/Installer, Fixed Orifice 412-034 (34-004)</p>
 <p>34005</p>	<p>Remover, Broken Orifice 412-035 (34-005)</p>
 <p>34005</p>	<p>Adapter for 412-034 412-034-01</p>

Removal

RHD vehicles

- **Unclip** the condensert to evaporator line from the side member.



All vehicles

2. Remove the air **cleaner** housing. For additional information, refer to:

Air Cleaner - 1.25L Duratec-I6V (Sigma)/1.4L Duratec-I6V (Sigma)/1.6L Duratec-I6V (Sigma) (303-12 **Intake Air Distribution and Filtering, Removal and Installation**),

Air Cleaner - 1.3L Duratec-8V (Rocam) (303-12 **Intake Air Distribution and Filtering, Removal and Installation**),

Air Cleaner - 1.4L Duratorq-TDCi(DV) Diesel (303-12 **Intake Air Distribution and Filtering, Removal and Installation**),

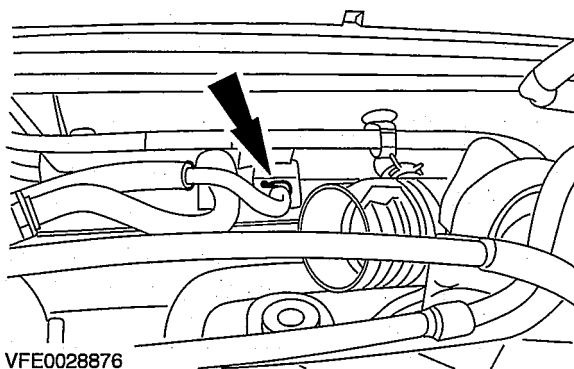
Luftfilter - 2.0L Duratec-HE (M14) (303-12, **Removal and Installation**),

Luftfilter - 1.6L Duratorq-TDCi(DV) Diesel (303-12, **Removal and Installation**).

3. Evacuate the air conditioning (A/C) system.

For additional information, refer to: Air Conditioning (A/C) System Recovery, Evacuation and Charging (412-00 Climate Control System - **General Information, General Procedures**).

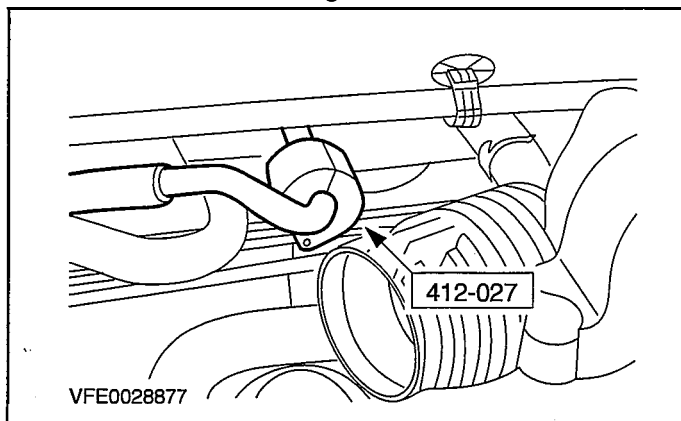
4. Remove the retaining clip of the refrigerant line **quick-release** coupling.



5. **CAUTION:** Close off the refrigerant line and the evaporator to prevent dirt ingress. Detach the refrigerant line from the evaporator.

REMOVAL AND INSTALLATION

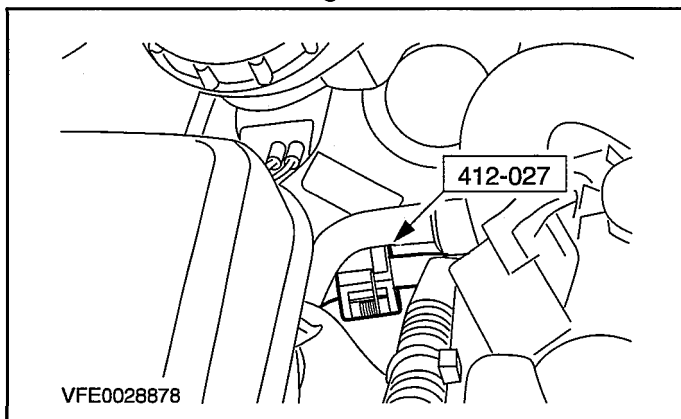
- Discard the O-rings.



6. **CAUTION:** Close off the refrigerant line to prevent dirt ingress.

Remove the refrigerant line with the fixed orifice tube.

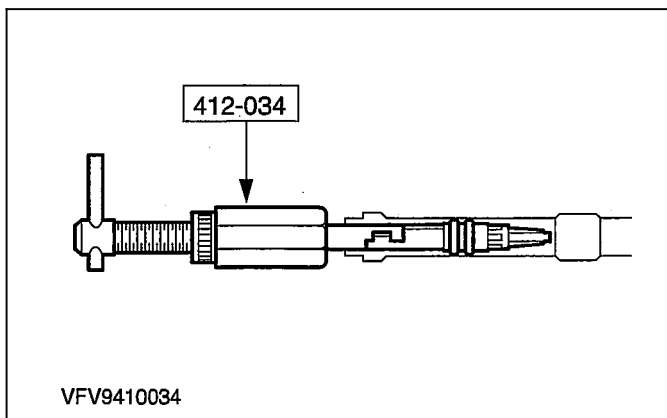
- Discard the O-rings.



Vehicles with manual transmission

7. Using the special tool, remove the fixed orifice tube.

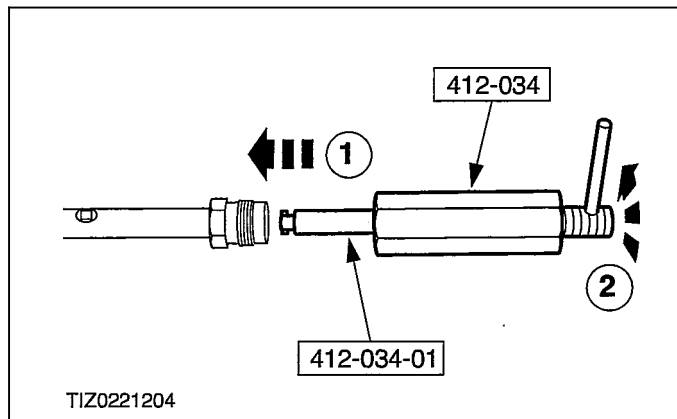
- Hook the special tool into the fixed orifice tube, turn it clockwise and remove the fixed orifice tube.



Vehicles with automatic transmission

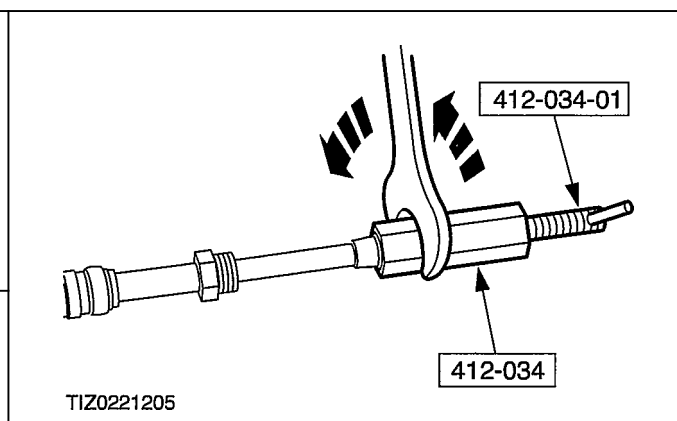
8. Hook the special tool into the fixed orifice tube.

1. Insert the special tool with adapter into the fixed orifice tube.
2. By turning the adapter a quarter turn, hook it into the fixed orifice tube.



9. Remove the fixed orifice tube.

- Turn the special tool, holding the adapter at the same time.

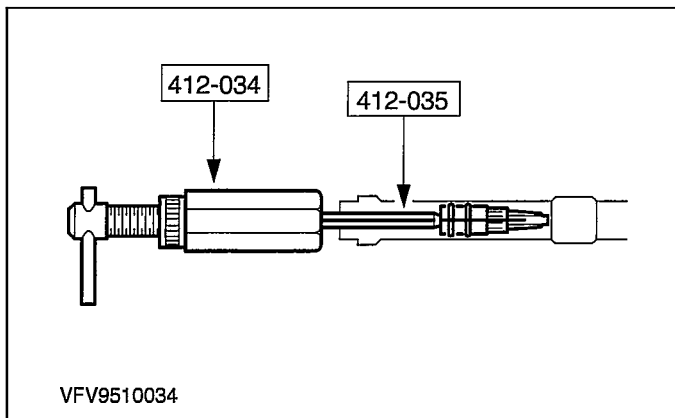


All vehicles

10. **NOTE:** This step is only necessary if the fixed orifice tube is faulty.

REMOVAL AND INSTALLATION

Using the special tools, remove the broken fixed orifice tube.

**Installation**

1. NOTE: Install new refrigerant line O-rings.

NOTE: Coat the refrigerant line O-rings with clean refrigerant oil before installation.

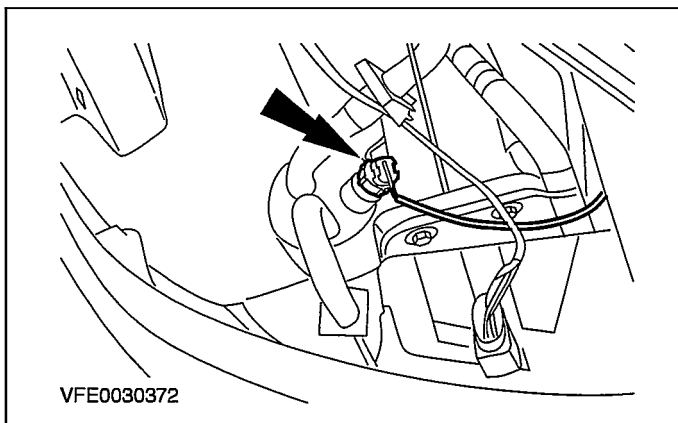
Install the components in the reverse order.

REMOVAL AND INSTALLATION**Low-Pressure Cutoff Switch(34 629 0)****Removal**

1. Remove the right-hand headlamp.

For additional information, refer to:
Headlamps (417-01, Removal and
Installation).

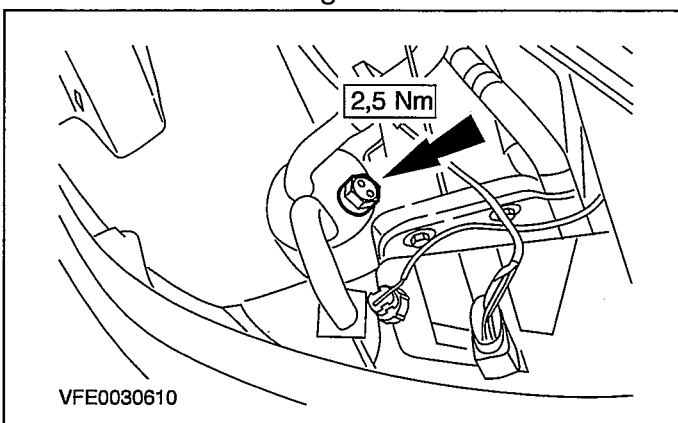
2. Disconnect the low pressure switch
connector.



3. **▲WARNING:** Make certain that the valve of the low pressure switch is completely closed after removal of the low pressure switch, to prevent refrigerant from escaping. Failure to observe this instruction can lead to injury.

Remove the low pressure switch.

- Discard the O-rings.

**Installation**

- **NOTE:** Install new O-rings on the low pressure switch.

NOTE: Coat the low pressure switch O-rings with clean refrigerant oil before installation.

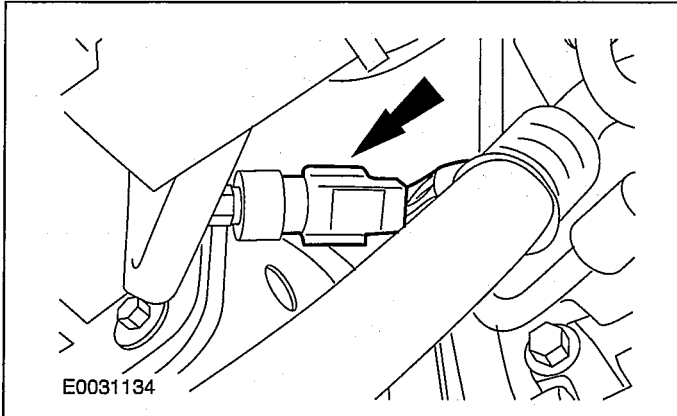
Reinstall the components in reverse order.

REMOVAL AND INSTALLATION

High-Pressure Cutoff Switch(34 631 0)

Removal

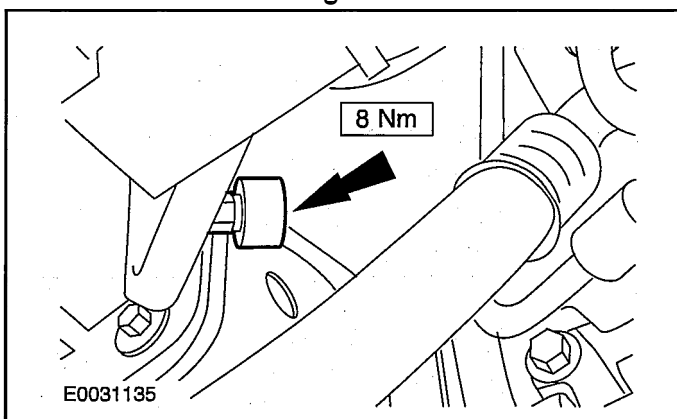
1. Raise the vehicle. For additional information, refer to Section 100-02[Jacking and Lifting].
2. Disconnect the high-pressure switch electrical connector.



3. **▲WARNING:** Make certain that the valve of the high pressure switch is completely closed after removal of the high pressure switch, to prevent refrigerant from escaping. Failure to observe this instruction can lead to injury.

Remove the high pressure switch.

- Discard the O-rings.



Installation

1. **NOTE:** Install new O-rings on the high pressure switch.

NOTE: Coat the high pressure switch O-rings with clean refrigerant oil before installation.

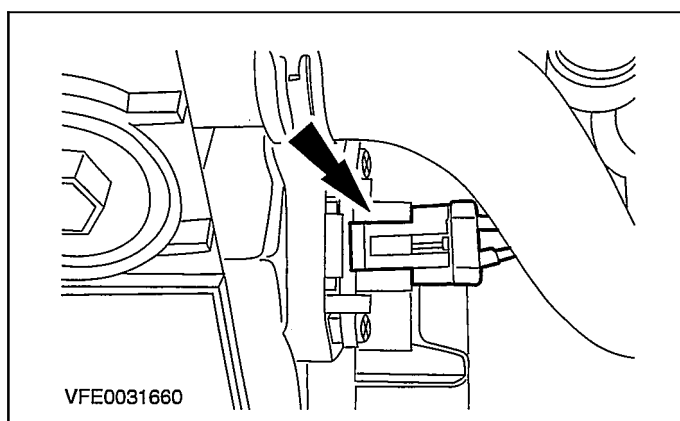
Reinstall the components in reverse order.

REMOVAL AND INSTALLATION

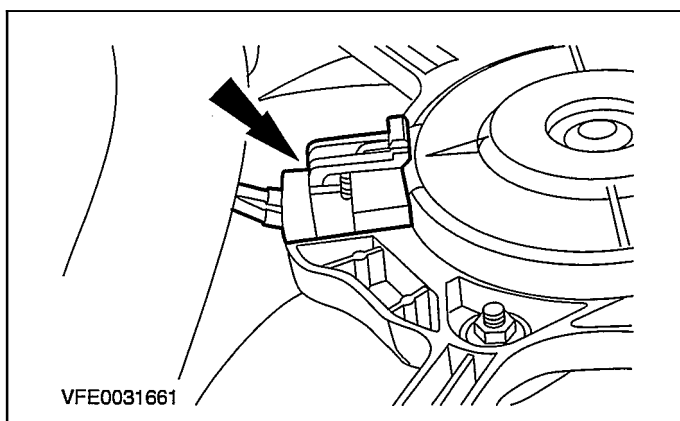
Condenser Core(34 632 4)

Removal

1. Drain the air conditioning system. For additional information, refer to Section 412-00 [Climate Control System - General Information].
2. Raise the vehicle. For additional information, refer to Section 100-02 [Jacking and Lifting].
3. Disconnect the radiator fan resistor connector.



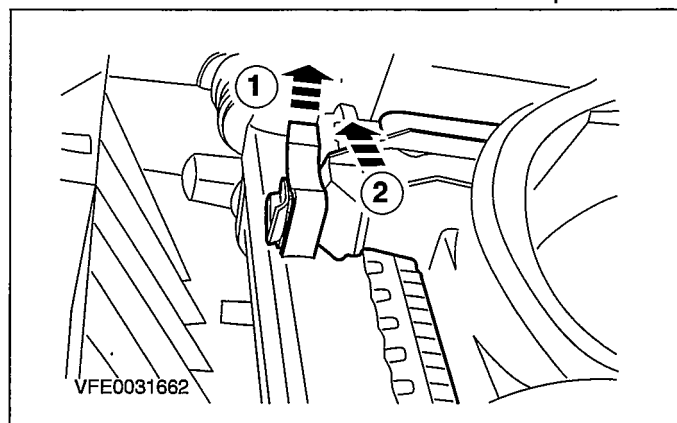
4. Disconnect the radiator fan connector.



5. Unclip the radiator fan from the left-hand clip.

1. Pull back the clip.

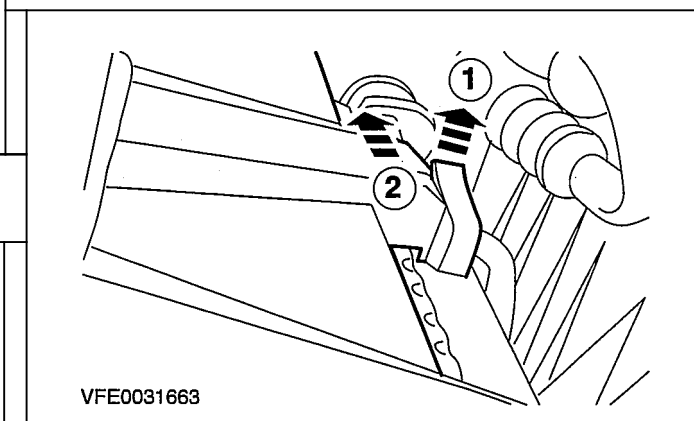
2. Press the radiator fan out of the clip.



6. Remove the radiator fan.

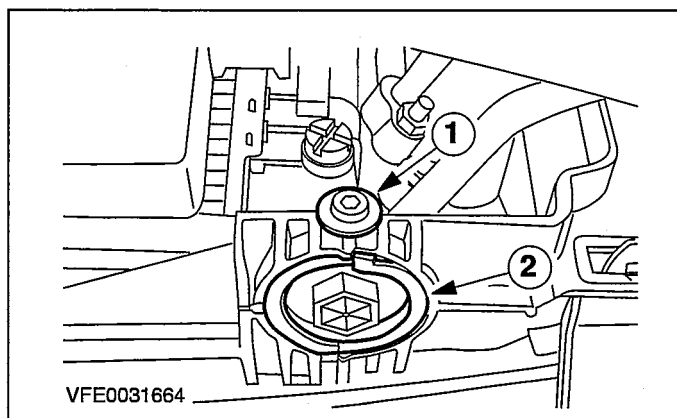
1. Pull back the clip.

2. Press the radiator fan out of the clip and remove it.



7. Remove the radiator bracket bolts (right-hand side shown).

1. Remove the security bolts.
2. Unscrew the bolts.

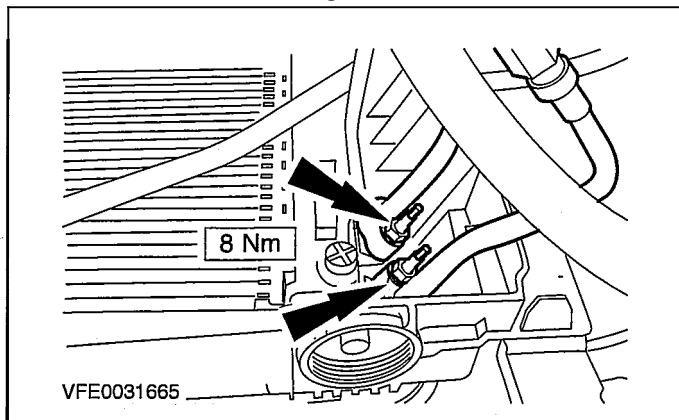


REMOVAL AND INSTALLATION

8. **⚠ CAUTION:** Close off the refrigerant lines and the A/C condenser to prevent dirt from entering.

Detach the refrigerant lines from the condenser.

- Discard the O-rings.



Installation

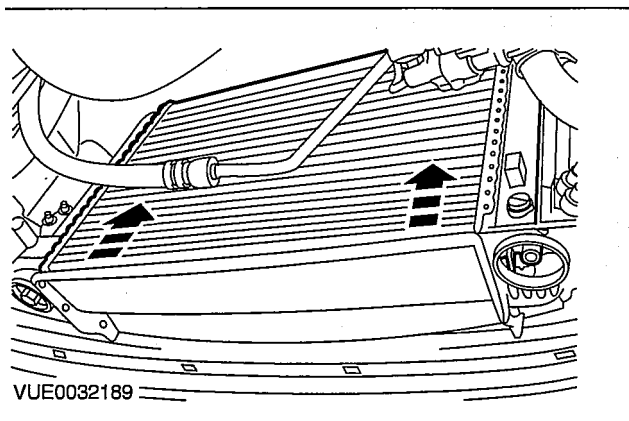
1. **⚠ CAUTION:** Do not damage the foam seals of the condenser.

NOTE: Install new O-rings on the refrigerant lines.

NOTE: Coat the refrigerant line O-rings with clean refrigerant oil before installation.

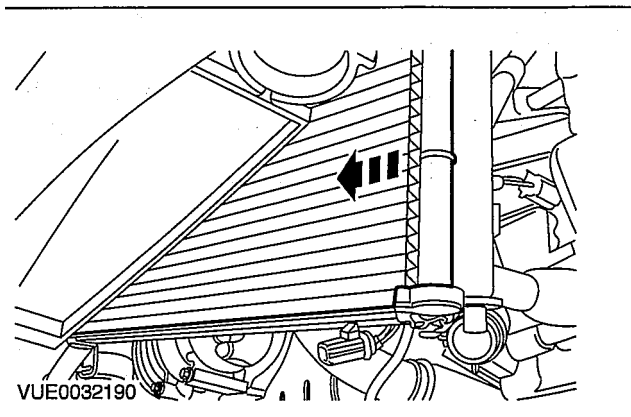
Reinstall the components in reverse order.

9. Detach the radiator and condenser from the front panel.



10. **⚠ CAUTION:** Do not damage the foam seals of the condenser.

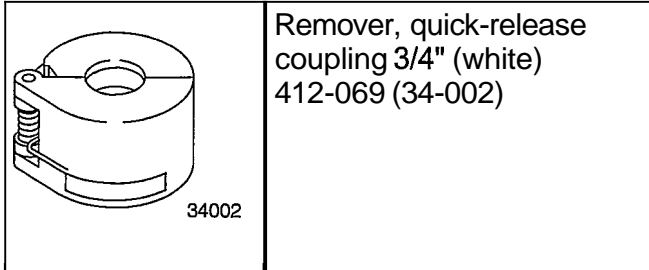
Remove the condenser.



REMOVAL AND INSTALLATION

Suction Accumulator(34 630 4)

Special Tool(s)



Removal

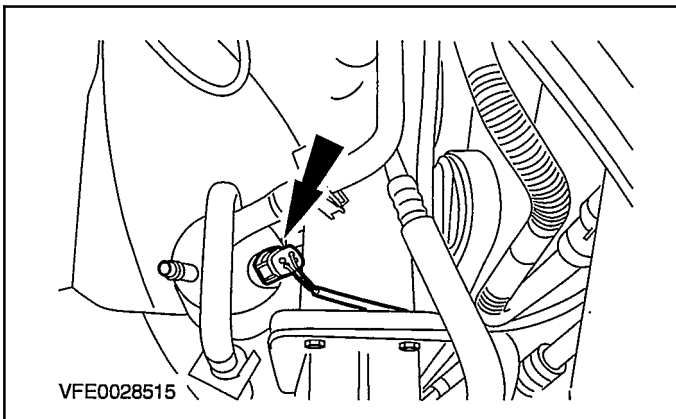
1. Remove the right-hand **headlamp** assembly.

For additional information, refer to:
Headlamp Assembly (417-01 Exterior Lighting, Removal and Installation).

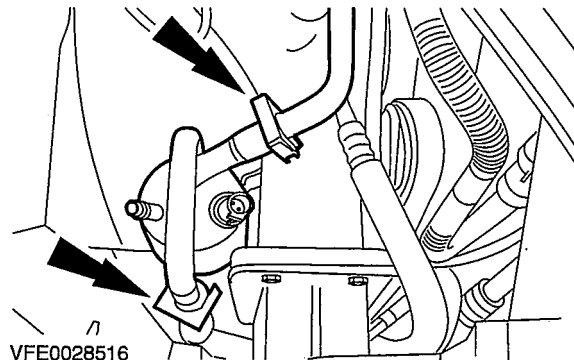
2. Drain the air conditioning system.

For additional information, refer to: Air Conditioning (**A/C**) System Recovery, Evacuation and Charging (412-00 Climate Control System - General Information, General Procedures).

3. Disconnect the low-pressure cutoff switch electrical connector.



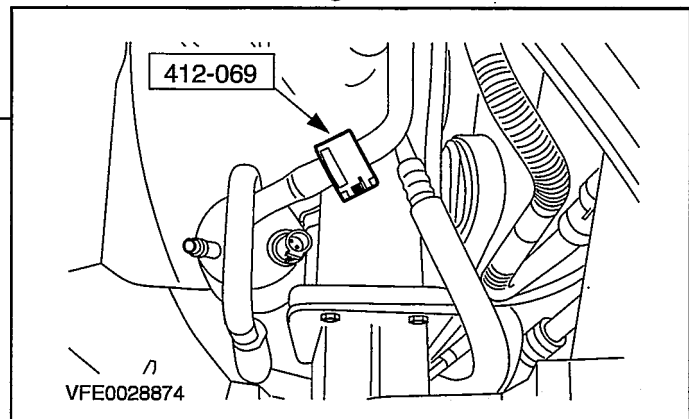
4. Remove the refrigerant line quick release coupling securing clips.



5. **CAUTION:** Close off the refrigerant lines and the suction accumulator to prevent contamination.

Using the special tool, disconnect the upper refrigerant line from the suction accumulator.

- Discard the O-ring seals.



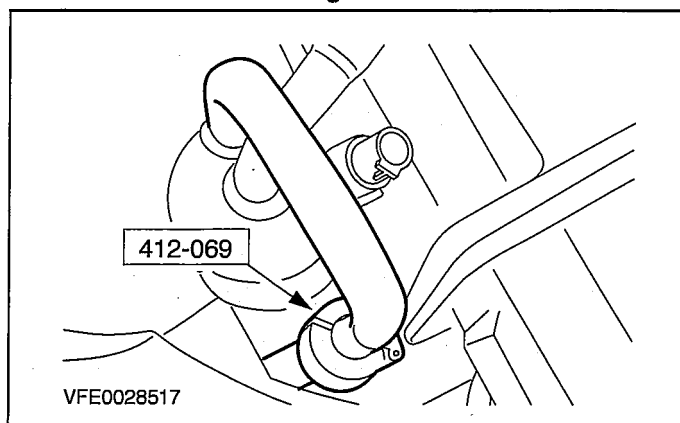
6. **CAUTION:** Close off the refrigerant lines and the suction accumulator to prevent contamination.

Using the special tool, disconnect the lower refrigerant line from the suction accumulator.

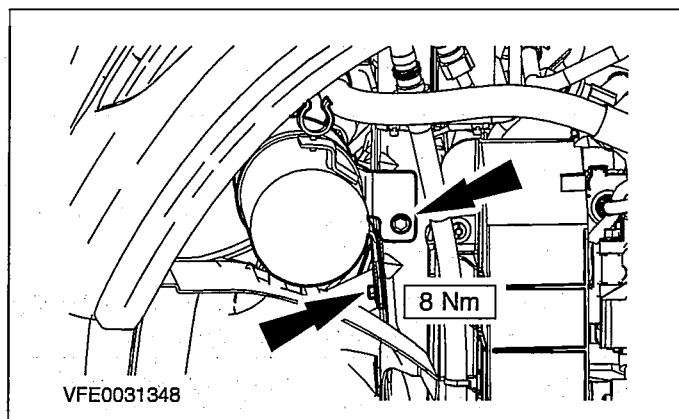
- Unclip the refrigerant line.

REMOVAL AND INSTALLATION

- Discard the O-ring seals.

**7. Raise and support the vehicle.**

For additional information, refer to: **Lifting (100-02 Jacking and Lifting, Description and Operation).**

8. Remove the suction accumulator.**Installation**

- **NOTE:** Install new refrigerant line O-ring seals.

NOTE: Lubricate the refrigerant line O-ring seals with clean refrigerant oil before installation.

To install reverse the removal procedure.

REMOVAL AND INSTALLATION

Air Conditioning (A/C) Compressor — 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/2.0L Duratec-HE (MI4)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)(34 626 4)

Removal

All vehicles

■ Drain the **A/C** system.

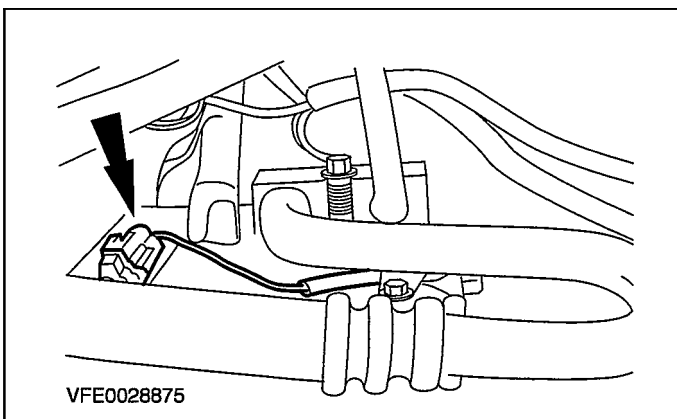
For additional information, refer to: Air Conditioning (**A/C**) System Recovery, Evacuation and Charging (412-00 **Climate Control** System - General Information, General Procedures).

2. Remove the accessory drive belt. For additional information, refer to: (303-05 Accessory Drive)

Accessory Drive **Belt** - **1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)**, Vehicles With: Air Conditioning (**Removal and Installation**),

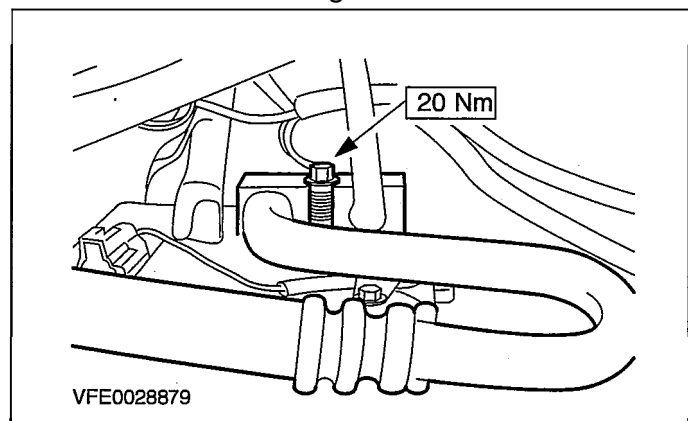
Accessory Drive **Belt** - **1.3L Duratec-8V (Rocam) (Removal and Installation)**,
 Accessory Drive **Belt** - **2.0L Duratec-HE (MI4) (Removal and Installation)**,
 Accessory Drive **Belt** - **1.6L Duratorq-TDCi (DV) Diesel (Removal and Installation)**.

3. Disconnect the **A/C** clutch connector (1.3L engine shown).



Disconnect the refrigerant lines from the **A/C** compressor (**1.3L** engine shown).

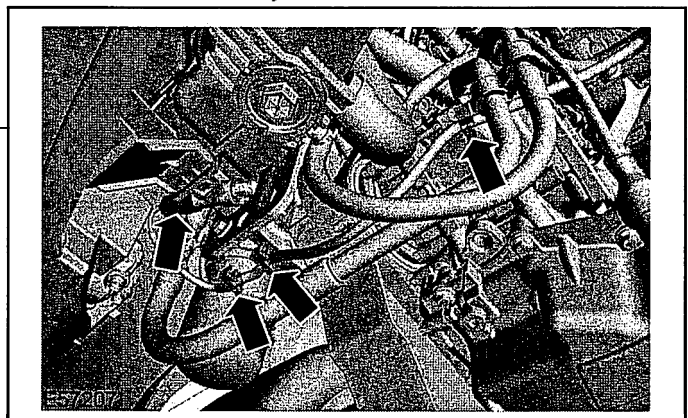
- Discard the O-ring seals.



Vehicles with 2.0L engine

5. Disconnect the high-pressure cutoff switch electrical connector.

- a. Unclip the high-pressure cutoff switch wiring harness and position it to one side.

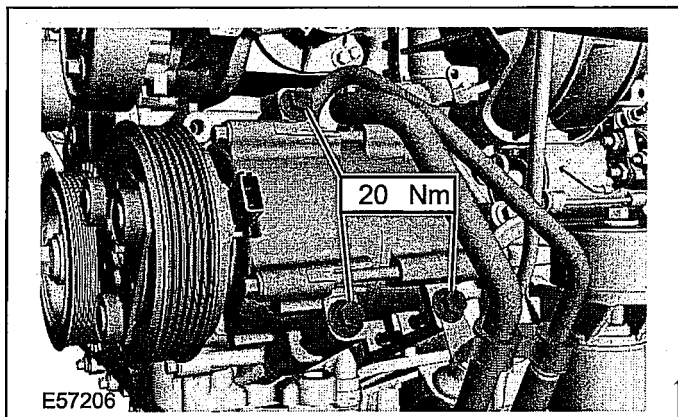


4. **⚠ CAUTION:** Close off the refrigerant lines and the **A/C** compressor to prevent contamination.

NOTE: On vehicles with a 2.0L engine, this step should only be carried out once the **A/C** compressor has been detached.

REMOVAL AND INSTALLATION

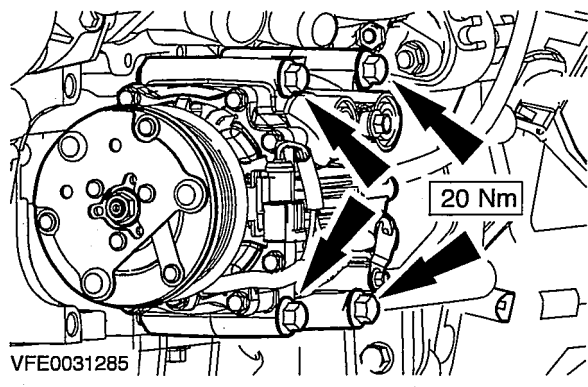
6. Detach the **A/C** compressor from the engine, lower it and secure it to one side.



Vehicles with 1.25l, 1.4l or 1.6l engine

7. **CAUTION:** Support the **A/C** compressor before removing the retaining bolts and secure it to one side to prevent load being placed on the refrigerant lines.

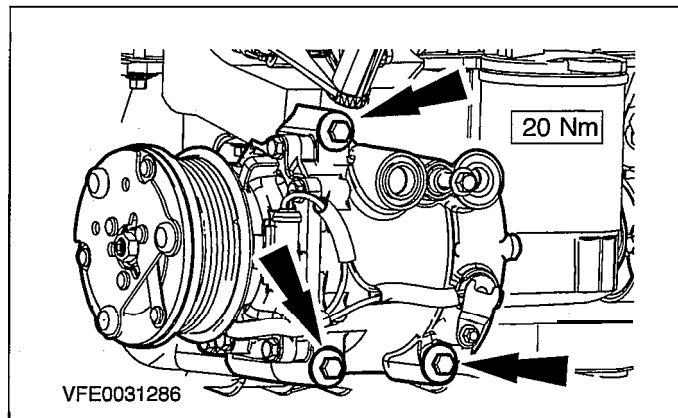
Remove the **A/C** compressor.



Vehicles with 1.3l engine

8. **CAUTION:** Support the **A/C** compressor before removing the retaining bolts and secure it to one side to prevent load being placed on the refrigerant lines.

Remove the **A/C** compressor.



Installation

1. **NOTE:** Install new refrigerant line O-ring seals.

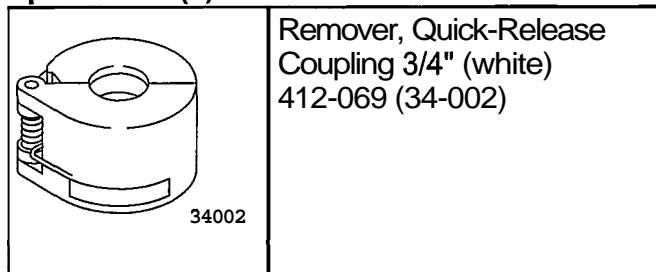
NOTE: Lubricate the refrigerant line O-ring seals with clean refrigerant oil before installation.

To install, reverse the removal procedure.

REMOVAL AND INSTALLATION

Compressor Manifold and Tube Assembly

Special Tool(s)



Removal

All vehicles

1. Drain the air conditioning system.

For additional information, refer to:
Air Conditioning (A/C) System Recovery,
Evacuation and Charging (412-00).

Vehicles with 100 PS diesel engine

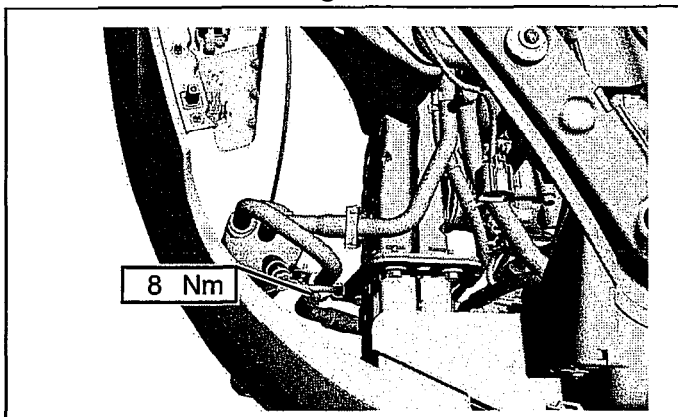
2. Remove the right-hand head lamp unit.

For additional information, refer to:
Headlamps (417-01, Removal and
Installation).

3. **⚠ CAUTION:** Close off the refrigerant lines and the dehydrator to prevent contamination.

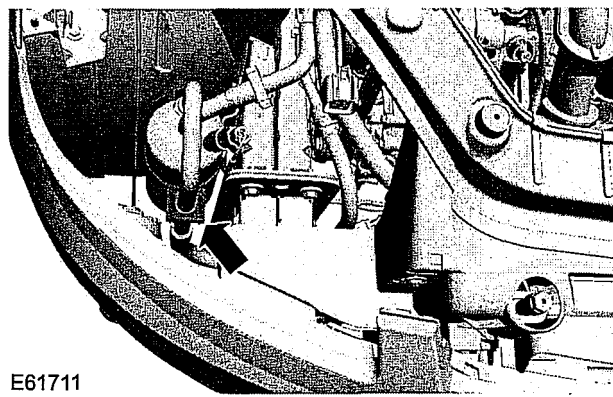
Detach the connection block and the compressor refrigerant lines from the dehydrator.

- Discard the O-rings.



All, except vehicles with 100 PS diesel engine

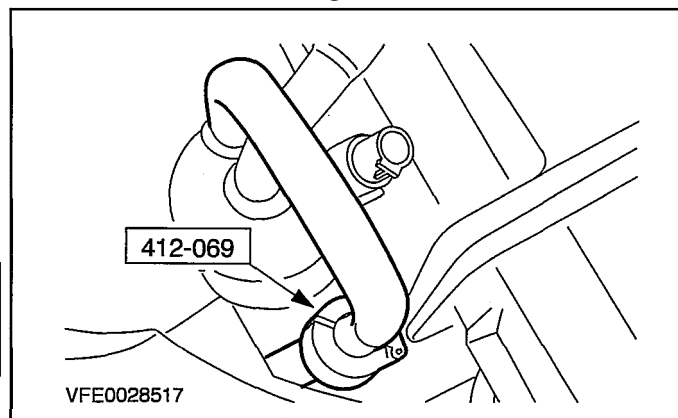
4. Remove the retaining clip of the A/C line quick-fit connector.



5. **⚠ CAUTION:** Close off the refrigerant lines and the dehydrator to prevent contamination.

Detach the connection block and the compressor refrigerant lines from the dehydrator.

- Discard the O-rings.



All vehicles

6. Raise vehicle for access

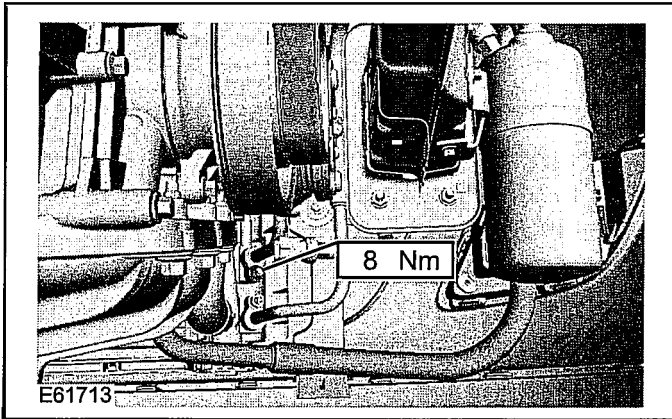
For additional information, refer to:
Lifting (100-02, Description and Operation).

7. **⚠ CAUTION:** Close off the refrigerant line and the condenser core to prevent contamination.

Detach the connection block and the compressor refrigerant lines from the condenser.

REMOVAL AND INSTALLATION

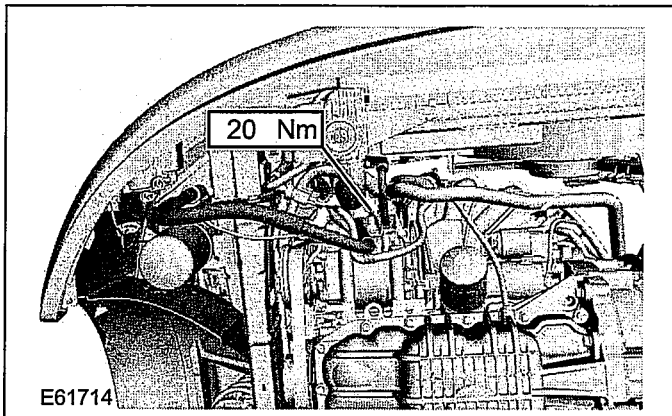
- Discard the O-rings.



8. **⚠ CAUTION:** Close off the compressor to prevent contamination.

Remove the connection block and the A/C compressor refrigerant lines.

- Discard the O-rings.

**Installation**

1. **NOTE:** Install new refrigerant line O-rings.

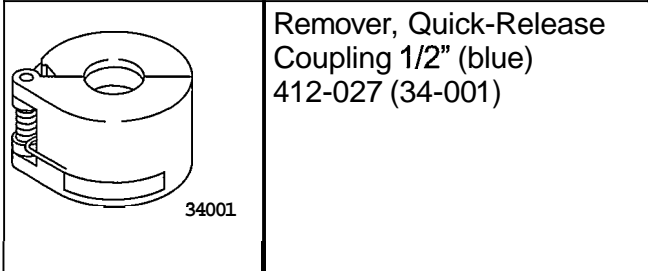
NOTE: Coat the O-rings for the refrigerant lines with clean refrigerant oil prior to installation.

To install, reverse the removal procedure.

REMOVAL AND INSTALLATION

Condenser to Evaporator Line(34 645 4)

Special Tool(s)



Removal

All vehicles

■ Drain the air conditioning system.

For **additional** information, refer to:
Air Conditioning (A/C) System Recovery,
Evacuation and Charging (412-00).

2. Remove the air filter housing. For additional
information, refer to: (303-12 Intake Air
Distribution and **Filtering**)

Air Cleaner - ■ **2.5L Duratec-16V (Sigma)/1.4L
Duratec-16V (Sigma)/1.6L Duratec-16V
(Sigma)** (Removal and **Installation**),

Air Cleaner - ■ **1.3L Duratec-8V (Rocam)**
(Removal and **Installation**),

Air Cleaner - ■ **1.4L Duratorq-TDCi(DV) Diesel**
(Removal and **Installation**),

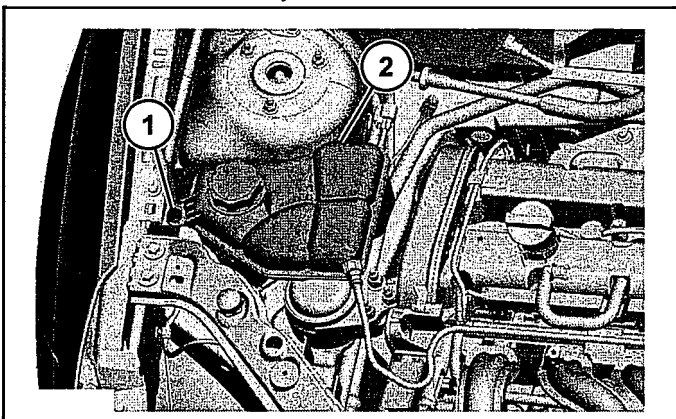
Air Cleaner - ■ **2.0L Duratec-HE (M14)** (Removal
and **Installation**),

Air Cleaner - ■ **1.6L Duratorq-TDCi(DV) Diesel**
(**Removal** and **Installation**).

3. Detach the coolant expansion tank from the
wheel housing.

■ Remove the bolt.

2. Unhook the coolant expansion tank from the
bracket and lay it to one side.



Vehicles with 100 PS diesel engine

4. Remove the right-hand head **lamp** unit.

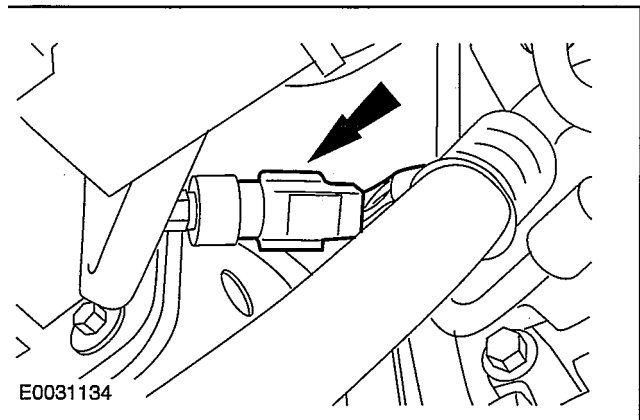
For additional information, refer to:
Headlamps (417-01, Removal and
Installation).

All vehicles

5. Raise vehicle for access

For additional information, refer to:
Lifting (**100-02**, Description and Operation).

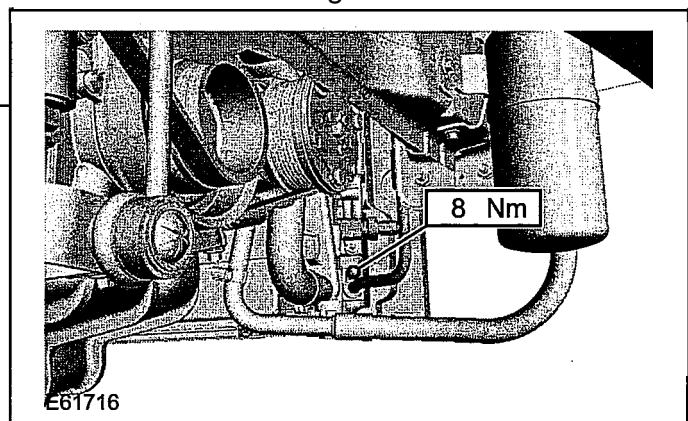
6. Disconnect the high-pressure switch
electrical connector.



7. **CAUTION:** Close off the refrigerant line
and the condenser core to prevent
contamination.

Disconnect the condenser to evaporator line
from the A/C condenser.

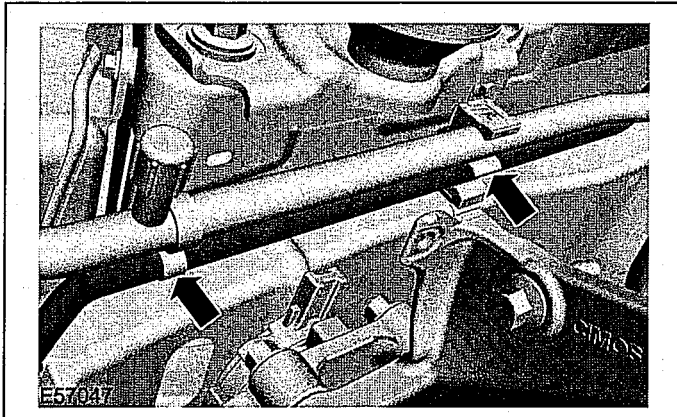
- Discard the O-rings.



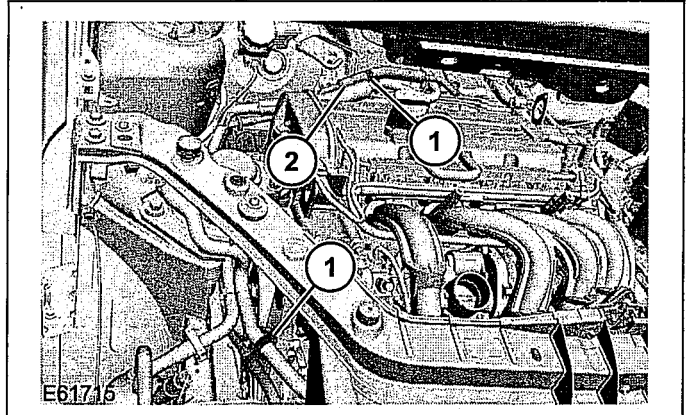
8. Lower the vehicle.

REMOVAL AND INSTALLATION

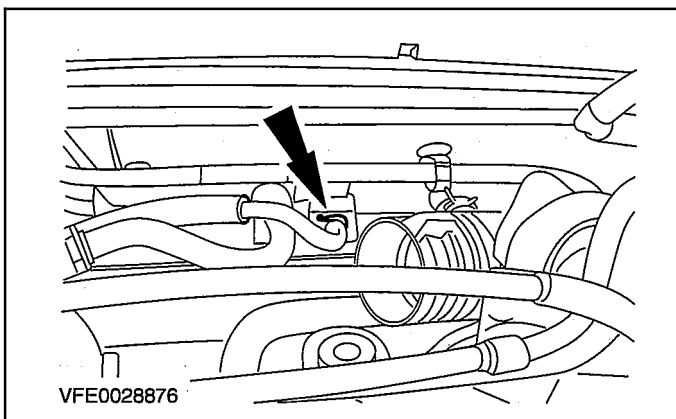
9. Unclip the condenser to evaporator line from the side member.



2. Remove the refrigerant line upwards, in the direction of the bulkhead.



10. Remove the retaining clip of the **A/C** line quick-fit connector.



Installation

■ **_NOTE:** Install new refrigerant line O-rings.

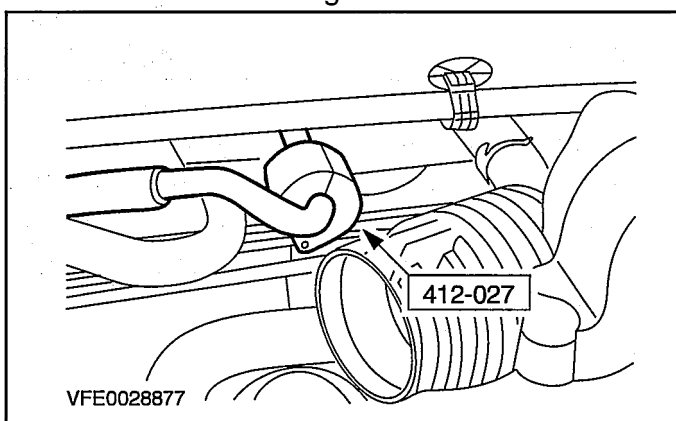
NOTE: Coat the O-rings for the refrigerant lines with clean refrigerant oil prior to installation.

To install, reverse the removal procedure.

11. **⚠ CAUTION:** Close off the refrigerant line and the evaporator core to prevent contamination.

Disconnect the condenser to evaporator line from the **A/C** evaporator core.

- Discard the O-rings.



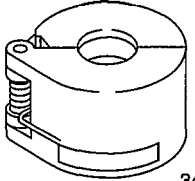
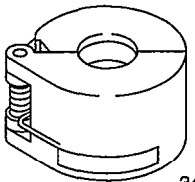
12. Remove the condenser to evaporator line.

■ **_Unclip** the refrigerant line.

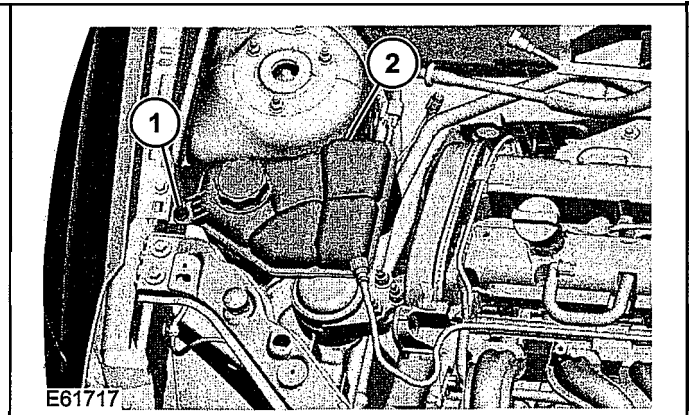
REMOVAL AND INSTALLATION

Evaporator Outlet Line(34 644 4)

Special Tool(s)

 <p>34003</p>	<p>Remover, Quick-Release Coupling 5/8" (black) 412-081 (34-003)</p>
 <p>34003</p>	<p>Remover, Quick-Release Coupling 3/4" (white) 412-069 (34-002)</p>

2. Unhook the coolant expansion tank from the bracket and lay it to one side.



Removal

All vehicles

1. Drain the air conditioning system.

For additional information, refer to:
Air Conditioning (A/C) System Recovery,
Evacuation and Charging (412-00).

2. Remove the air filter housing. For additional information, refer to: (303-12 Intake Air Distribution and Filtering)

Air Cleaner - **1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)** (Removal and Installation),

Air Cleaner - **1.3L Duratec-8V (Rocam)** (Removal and Installation),

Air Cleaner - **1.4L Duratorq-TDCi (DV) Diesel** (Removal and Installation),

Air Cleaner - **2.0L Duratec-HE (M14)** (Removal and Installation),

Air Cleaner - **1.6L Duratorq-TDCi (DV) Diesel** (Removal and Installation).

3. Detach the coolant expansion tank from the wheel housing.

1. Remove the bolt.

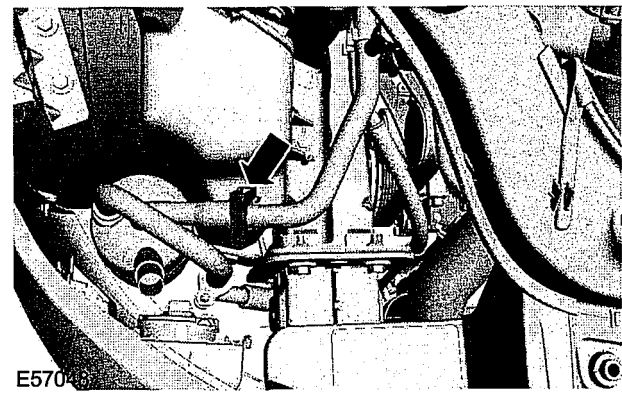
Vehicles with 100 PS diesel engine

4. Remove the right-hand head lamp unit.

For additional information, refer to:
Headlamps (417-01, Removal and Installation).

All vehicles

5. Remove the retaining clip of the **A/C** line quick-fit connector.

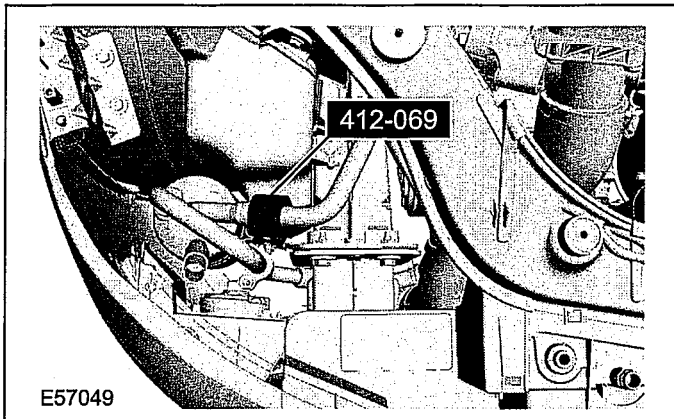


6. **CAUTION:** Close off the refrigerant line and the dehydrator to prevent contamination.

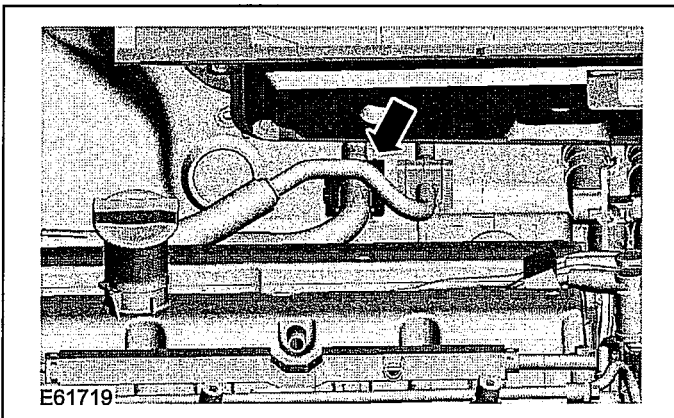
Disconnect the evaporator refrigerant outlet line from the dehydrator using the special tool.

REMOVAL AND INSTALLATION

- Discard the O-rings.

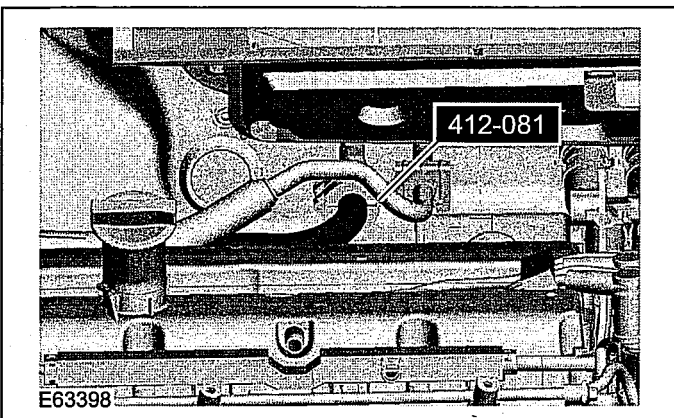


7. Remove the retaining clip of the **A/C** line quick-fit connector.

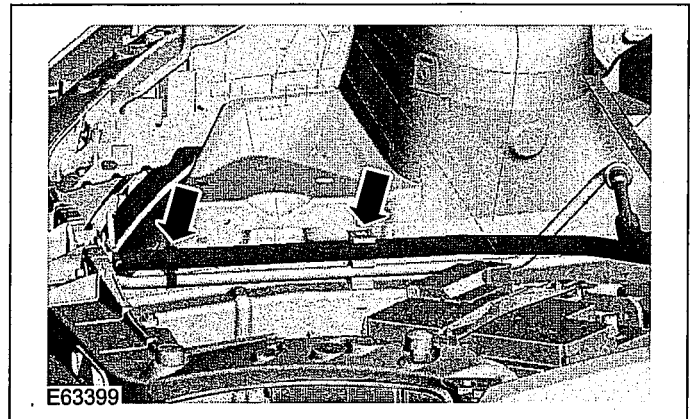


8. **⚠ CAUTION:** Close off the refrigerant line and the evaporator core to prevent contamination.

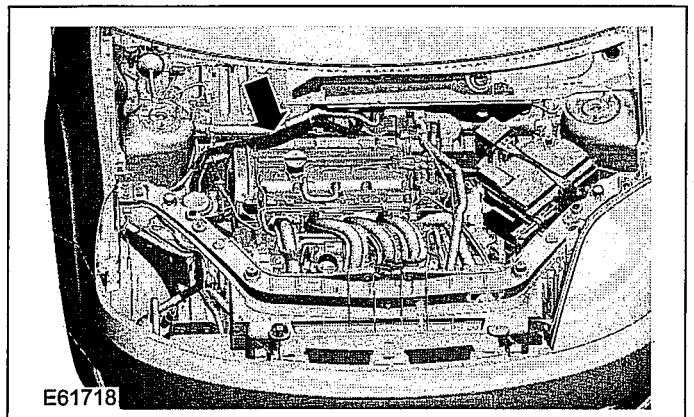
Detach the evaporator refrigerant outlet line from the evaporator.



9. Unclip the evaporator refrigerant outlet line from the side member.



10. Remove the evaporator refrigerant outlet line.



Installation

1. **NOTE:** Install new refrigerant line O-rings.

NOTE: Coat the O-rings for the refrigerant lines with clean refrigerant oil prior to installation.

To install, reverse the removal procedure.



SECTION 412-04 Control Components

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SPECIFICATIONS	
Specifications.....	412-04-2
DESCRIPTION AND OPERATION	
Control Components.....	412-04-3
Climate control Assembly.....	412-04-3
Overview of heater/evaporator core housing _ vehicles with EATC.....	412-04-6
In-vehicle temperature sensor _ vehicles with EATC.....	412-04-7
DIAGNOSIS AND TESTING	
Control Components.....	412-04-8
REMOVAL AND INSTALLATION	
Climate Control Assembly..... (34 300 0)	412-04-9
Climate Control Assembly — Vehicles Built From: 1012005..... (34 300 0)	412-04-13
Blower Motor Switch..... (33 574 0)	412-04-15
Air Inlet Blend Door Actuator.....	412-04-19
Temperature Blend Door Actuator..... (34 590 0)	412-04-20
Footwell Vent/Duct Blend Door Actuator.....	412-04-21
Center Register Air Discharge Temperature Sensor.....	412-04-26
Footwell Air Discharge Temperature Sensor.....	412-04-27

SPECIFICATIONS**Tightening Torques**

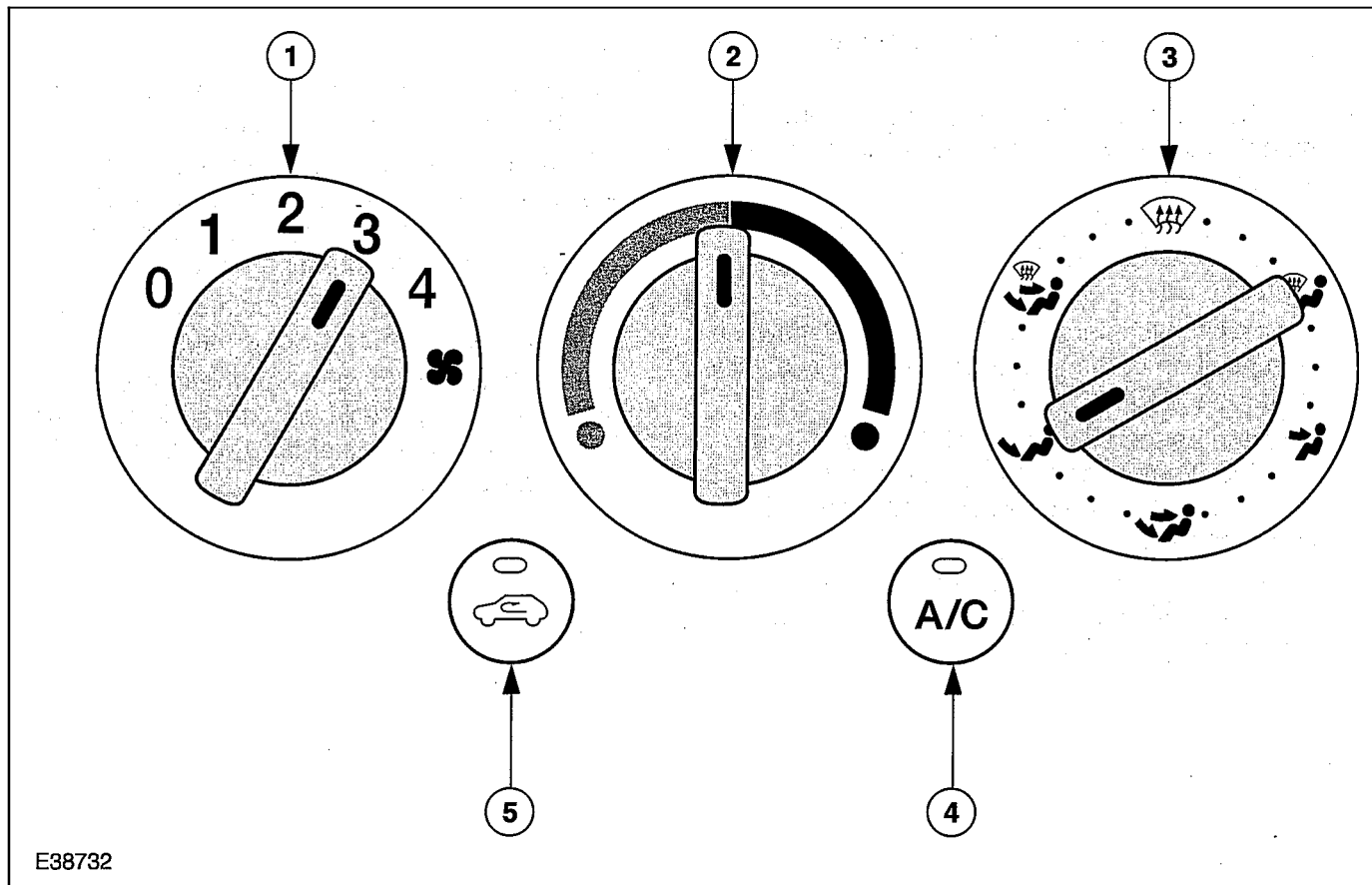
Item	Nm	lb-ft	lb-in
Bolts - dashboard crossmember	20	15	-
Bolts - heater/evaporator housing to dashboard crossmember	5	-	44

DESCRIPTION AND OPERATION

Control Components

Climate control Assembly

Vehicles with manual temperature control



E38732

Item	Description
1	Blower switch
2	Temperature control switch
3	Air distribution control
4	A/C switch
5	Recirculated air switch.

Blower switch

- The air flow speed is adjusted using the blower switch.
- The blower motor switch is connected to a three-stage blower resistor by means of which it can be switched to four speeds.
- The blower is switched off in position 0.

Temperature control switch

- **NOTE:** The heating capacity depends on the engine coolant temperature.

The temperature control actuates the temperature control flap in the heater core housing via a **Bowden** cable and correspondingly more or less warm air is mixed with the surrounding air.

Air distribution control

- The air distribution control actuates the air distribution door in the heater core housing via a **Bowden** cable and air is guided accordingly to the air nozzles.

A/C switch

- **NOTE:** A cover is installed in place of the air conditioning switch on vehicles without air conditioning.

DESCRIPTION AND OPERATION

Vehicles with air conditioning are equipped with a heater control module which is integrated in the climate control assembly.

- Among other things, this heater control module informs the Powertrain Control Module (PCM) when the air conditioning switch is operated.
- The air conditioning system is switched on via the air conditioning switch.
- This pre-supposes that the blower switch is not in position 0.
- The heater control module sends a request signal to the PCM, which then switches on the A/C compressor.
- An orange Light Emitting Diode (LED) in the A/C switch indicates that the air conditioning is switched on.
- If the switch is operated when the blower switch is in position 0, the request signal is not initially sent to the PCM.
- As soon as the blower switch is moved from position 0 however, the request signal is transmitted and the PCM switches the A/C compressor on.
- When the ignition is switched off, the status of the air conditioning system is stored ready for the next engine start.

Recirculated air switch.

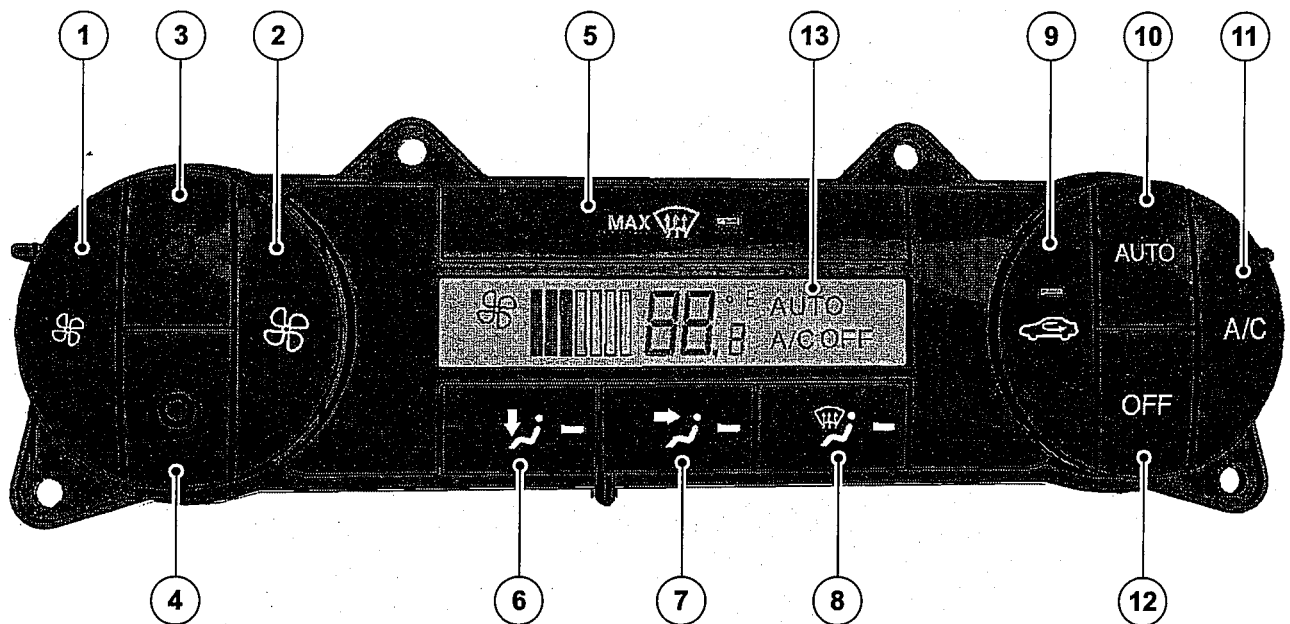
- **NOTE:** A cover is installed instead of the recirculated air switch on vehicles without air conditioning.

The purpose of the recirculated air switch is to switch between recirculated air and fresh air.

- Air inlet blend doors are integrated in the heater core housing in order to switch the recirculated air.
- These air inlet blend doors are operated by an electric motor in the heater core housing.
- When the recirculated air switch is operated, the servo motor in the heater core housing is actuated by the heater control module and opens or closes the air inlet blend doors.
- An orange LED in the recirculated air switch indicates recirculated air operation.
- The state is not stored when the ignition is switched off while recirculated air is in operation. Fresh air operation is started when the ignition is switched on again.

DESCRIPTION AND OPERATION

Vehicles with Electronic Automatic Temperature Control (EATC)



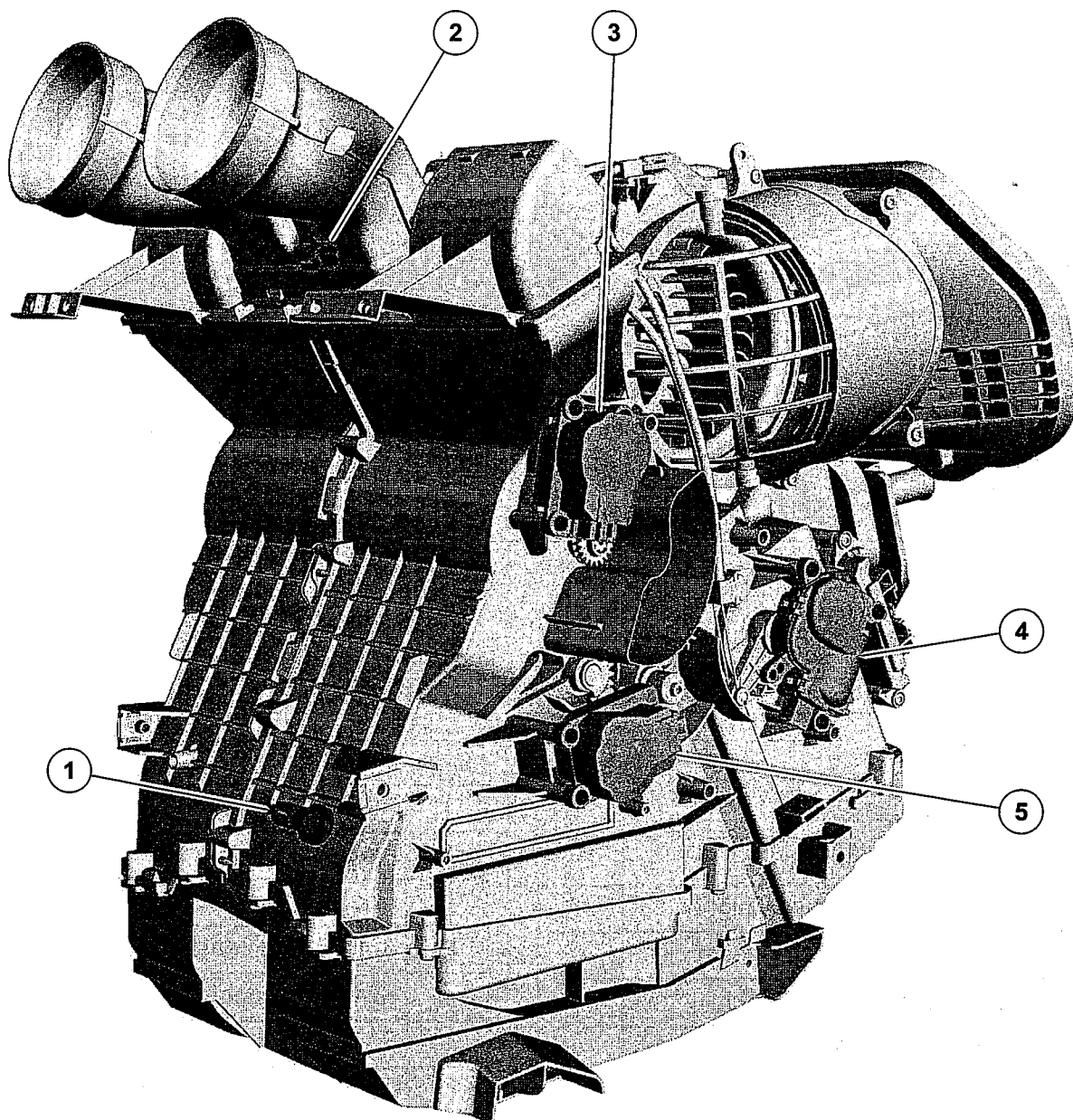
E64271

Item	Description
1	Blower speed lower
2	Blower speed higher
3	Blower air temperature higher
4	Blower air temperature lower
5	Defrost/demist windshield
6	Air distribution, footwell

Item	Description
7	Air distribution, face level
8	Air distribution, windshield
9	Recirculated air mode
10	Automatic climate control mode
11	Switch air conditioning on/off
12	Switch off automatic climate control
13	Climate control assembly display

DESCRIPTION AND OPERATION

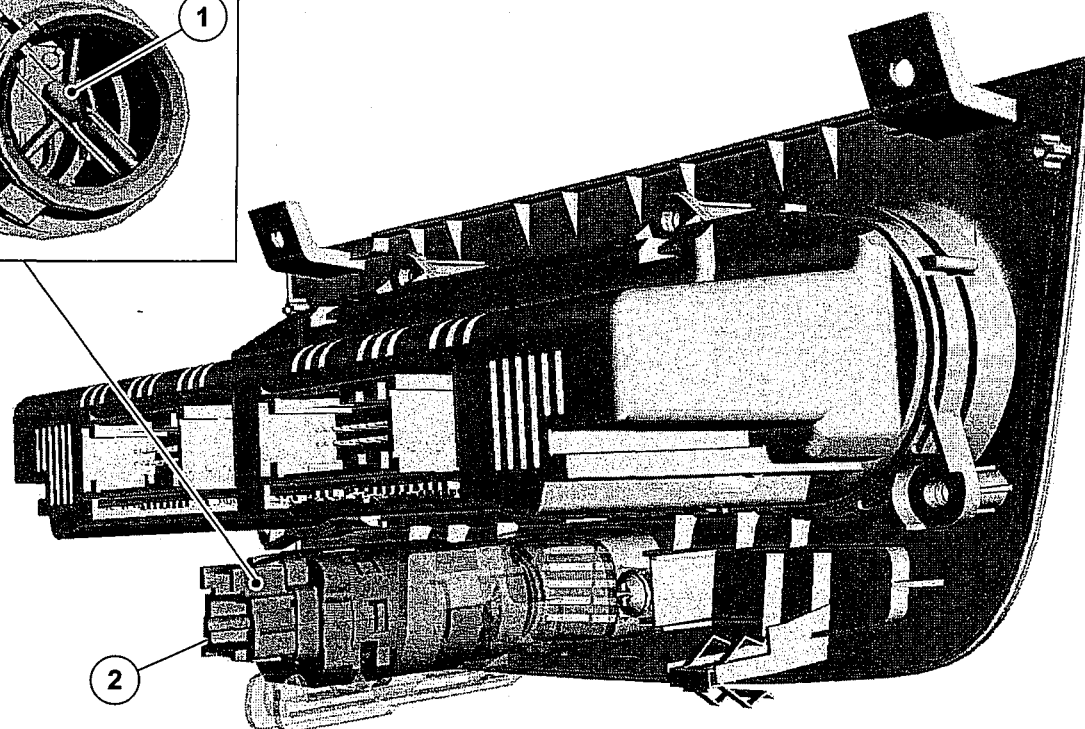
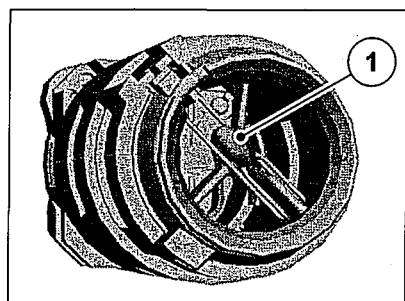
Overview of heater/evaporator core housing - vehicles with EATC



E64272

Item	Description
1	Air outlet temperature sensor, footwell
2	Air outlet temperature sensor, centre nozzles

Item	Description
3	Footwell ventilation actuator/air vent distribution door
4	Actuator - air distribution door
5	Temperature control air distribution door actuator

DESCRIPTION AND OPERATION**In-vehicle temperature sensor * vehicles with EATC**

E64410

Item	Description
1	Sensor element
2	In-vehicle temperature sensor with integrated fan

In order to achieve optimum measurement values, an integrated blower draws air from the interior into the in-vehicle temperature sensor.

The measured values are transmitted to the control module installed in the climate control assembly, which requires these in order to regulate the in-vehicle temperature.

Like the other air discharge temperature sensors, the in-vehicle temperature sensor is an Negative Temperature Coefficient (NTC) resistor.

DIAGNOSIS AND TESTING**Control Components**

REFER to Section 412-00 [Climate Control System
- General Information].

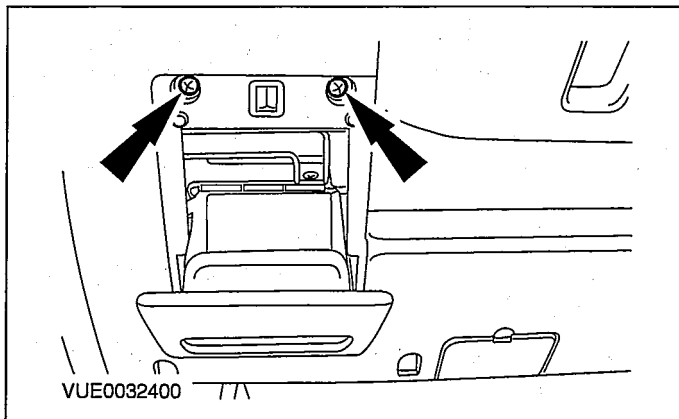
REMOVAL AND INSTALLATION

Climate Control Assembly(34 300 0)

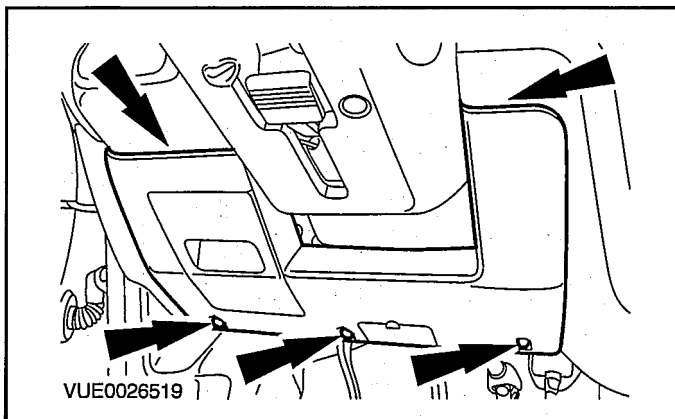
Removal

All vehicles

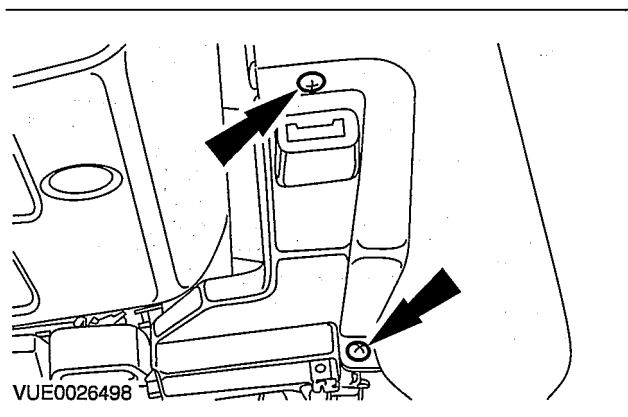
1. Open the stowage compartment and unscrew and remove the bolts from the lower **fascia/crash** padding trim.



2. Remove the **lower fascia/crash** padding trim.



3. Unscrew and remove the left-hand bolts from the fascial crash padding console.

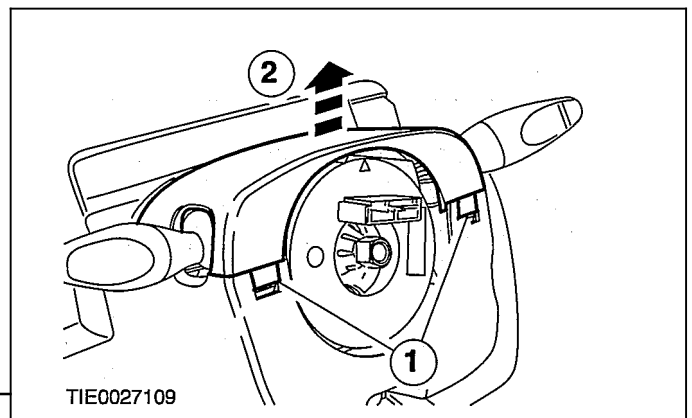


RHD vehicles

4. **NOTE:** Turn the steering wheel to gain access to the clips on the upper steering column trim.

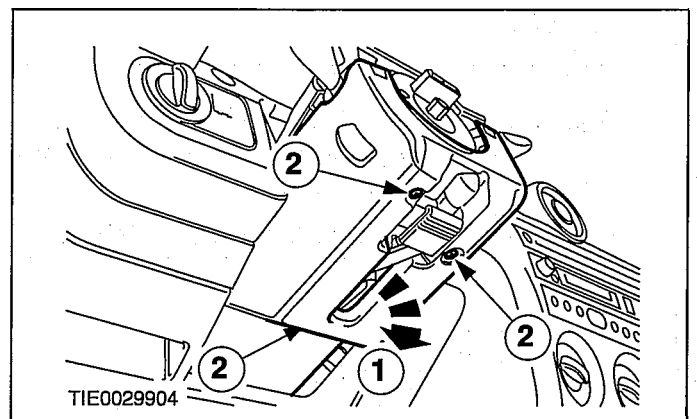
Detach the upper steering column trim from the lower steering column trim (steering wheel shown removed for clarity).

1. Use a narrow screwdriver to release the clips.
2. Detach the trim.



5. Remove the lower steering column trim (steering wheel shown removed for clarity).

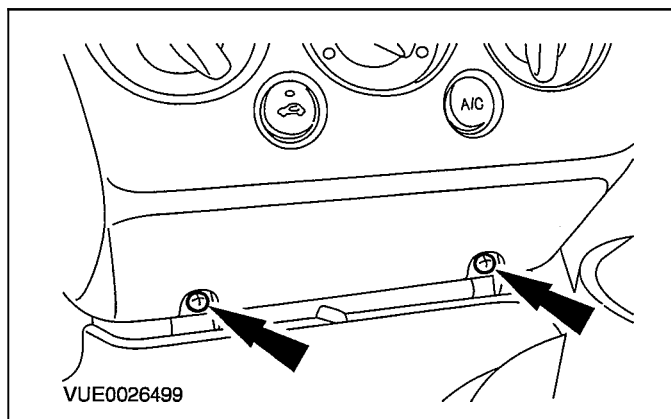
1. Release the steering column locking lever.
2. Unscrew the bolts.



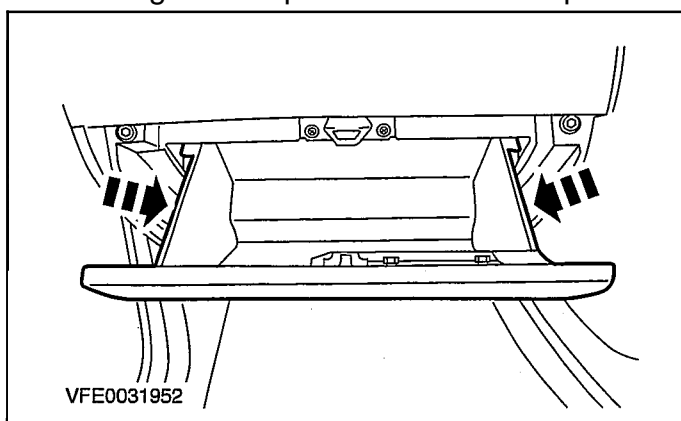
REMOVAL AND INSTALLATION

All vehicles

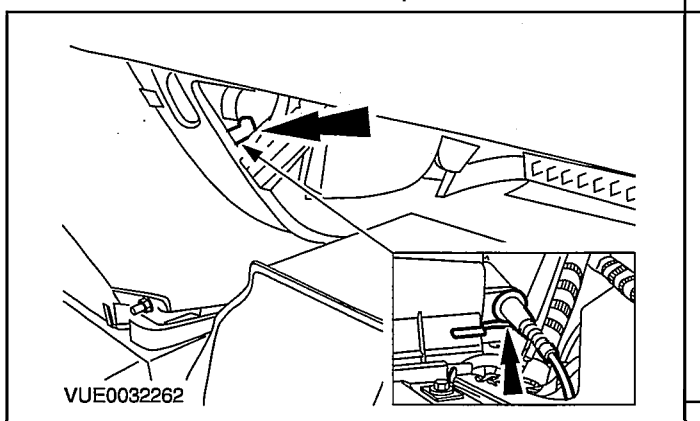
6. Unscrew and remove the lower bolts from the fascialcrash padding console.



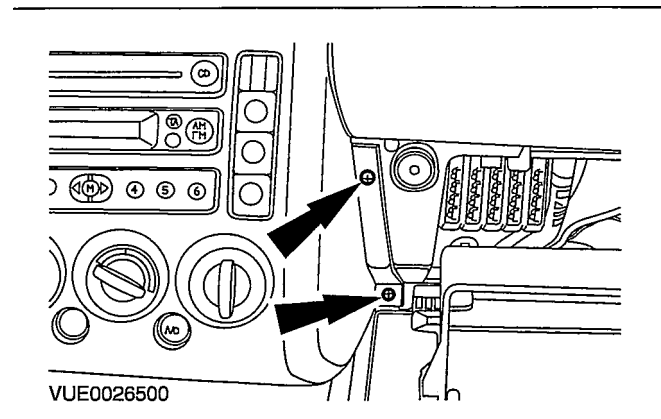
7. Fully open the glove compartment.
 - Press the sides towards the centre to release the glove compartment from the stops.



8. Detach the shaft of the air distribution flap from the adjusting mechanism on the heater core evaporator housing.
 - Release the catch and pull out the shaft.

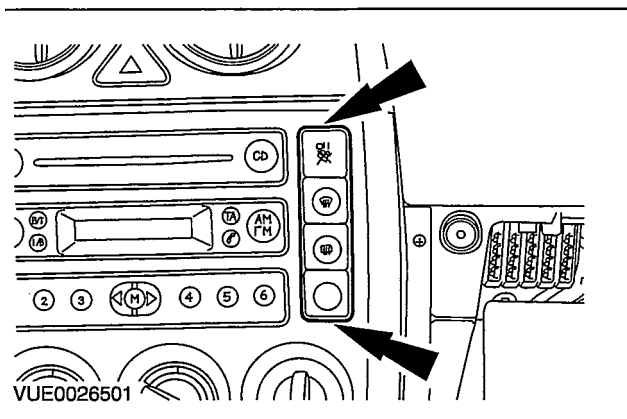


9. Unscrew and remove the right-hand bolts from the fascialcrash padding console.

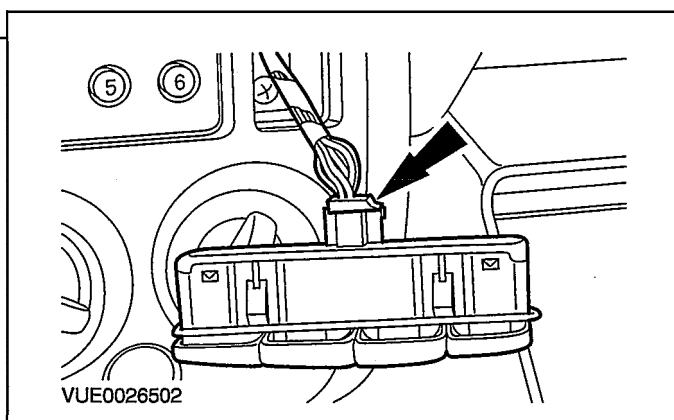


10. **CAUTION:** Support the screwdriver on suitable padding to avoid damaging the fascialcrash padding console.

Detach the switches from the fascia/crash padding console.

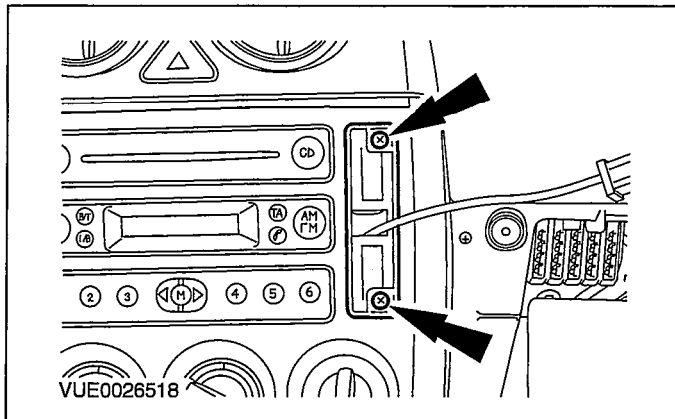


11. Unplug the connector and remove the switches.



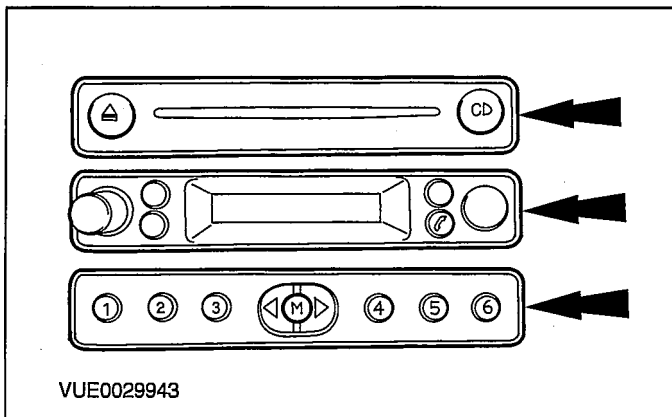
REMOVAL AND INSTALLATION

12. Unscrew and remove the upper bolts from the fascia/crash padding console.

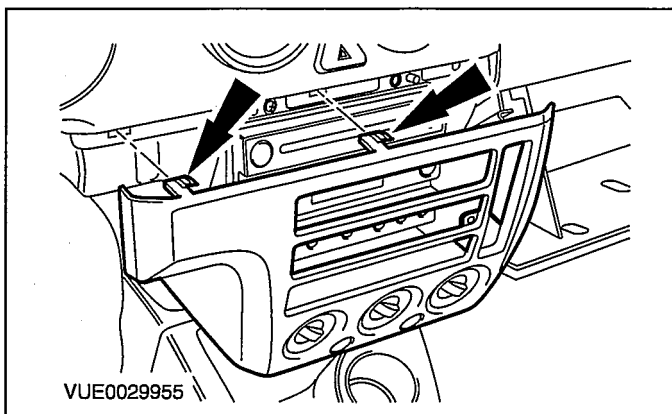


13. **⚠ CAUTION:** Use adhesive tape on the three segments of the audio unit to ensure that the audio unit is not damaged during removal of the **fascia/crash** padding console.

Cover the front of the three segments of the audio unit with adhesive tape.

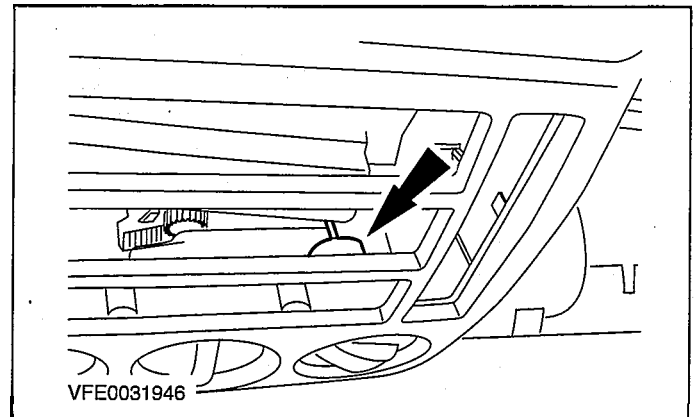


14. Pull the **fascia/crash** padding console forwards to gain access to the heater/air conditioning control unit.

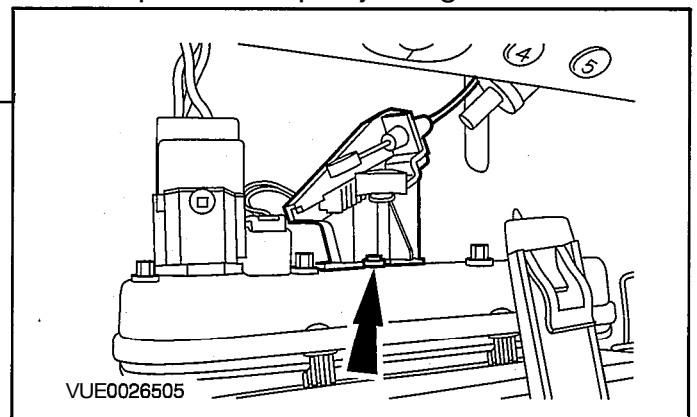


15. Detach the shaft of the air distribution flap from the heater/air conditioning control unit.

- Turn the air distribution rotary control while detaching the shaft.



16. Unscrew and remove the bolt for the temperature flap adjusting mechanism.



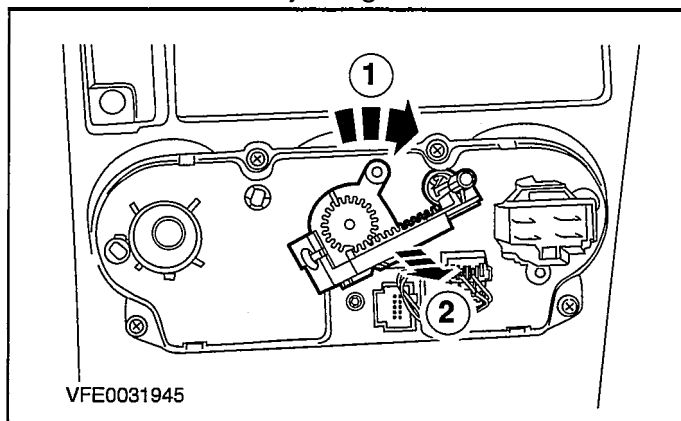
17. **⚠ CAUTION:** Do not kink the actuation cable for the temperature flap adjusting mechanism.

Detach the temperature flap adjusting mechanism from the heater/air conditioning control unit (heater/air conditioning control unit shown from the rear for clarity).

1. Rotate the adjusting mechanism clockwise.

REMOVAL AND INSTALLATION

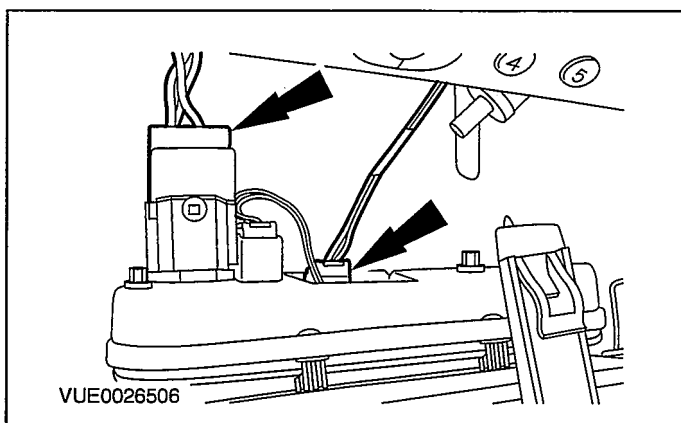
2. Pull out the adjusting mechanism.



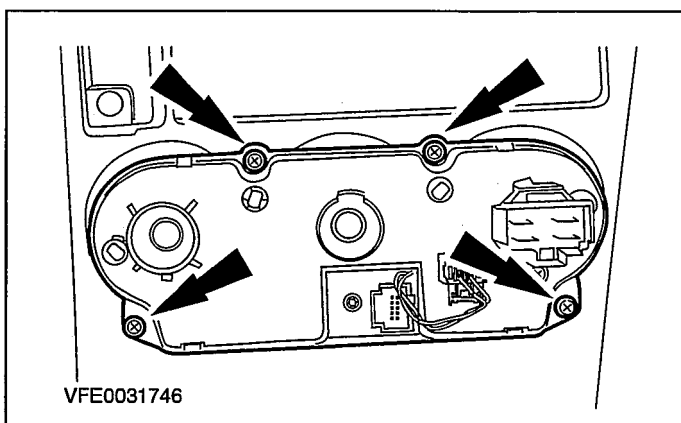
⚠ **Do** not kink the actuation cable for the temperature flap adjusting mechanism.

Refit the components in reverse order.

18. Unplug the connector from the heater/air conditioning control unit and remove the **fascia/crash** padding console.



19. Remove the heater/air conditioning control unit.



Installation

1. CAUTIONS:

⚠ **Ensure** that the shaft of the air distribution flap engages properly in the adjusting mechanism on the heater core / evaporator housing.

REMOVAL AND INSTALLATION

Climate Control Assembly — Vehicles Built From:
10/2005(34 300 0)

Removal

All vehicles

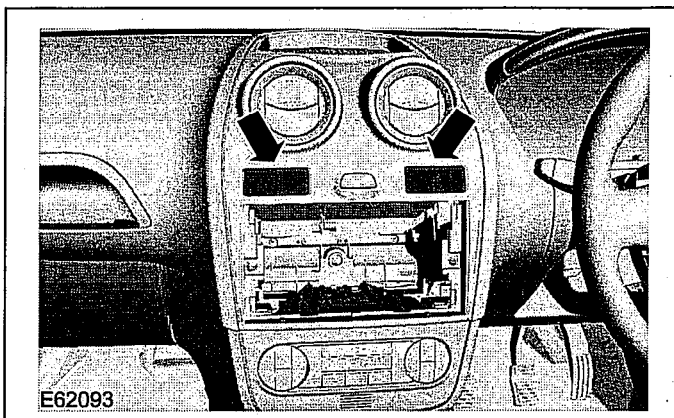
■ Remove the audio unit.

For additional information, refer to: Audio Unit -Vehicles Built From: **10/2005** (415-01 Audio Unit, Removal and Installation).

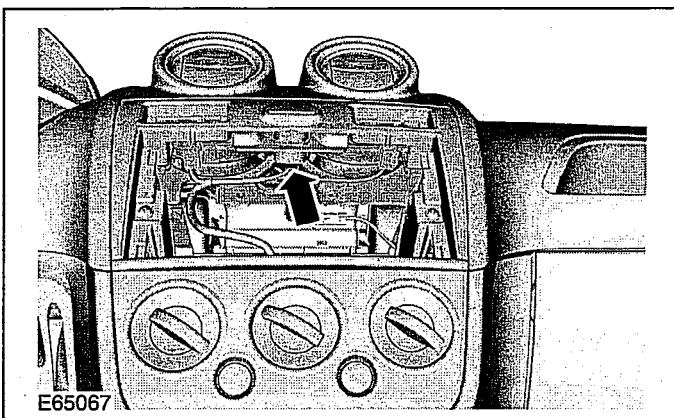
2. **⚠ CAUTION:** Support the screwdriver on suitable padding to avoid damage to the dashboard console.

Remove the dashboard console switches.

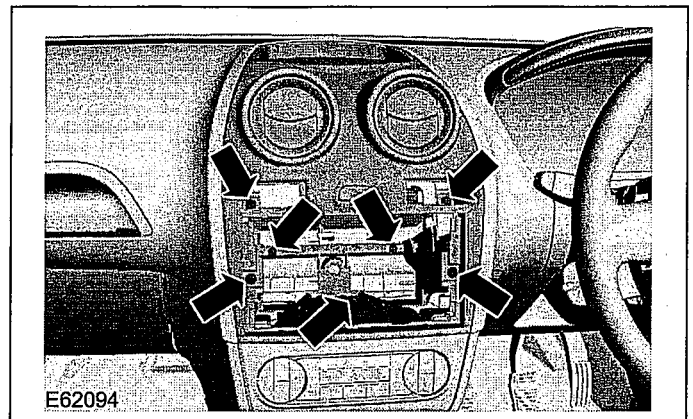
- Disconnect the electrical connector.



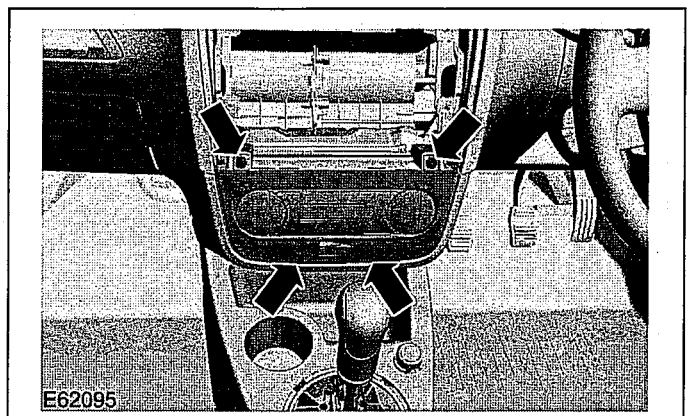
3. Disconnect the hazard warning switch connector.



4. Remove the dashboard console.



5. Detach the surround for the air conditioning system control panel and the air conditioning system control panel from the dashboard.

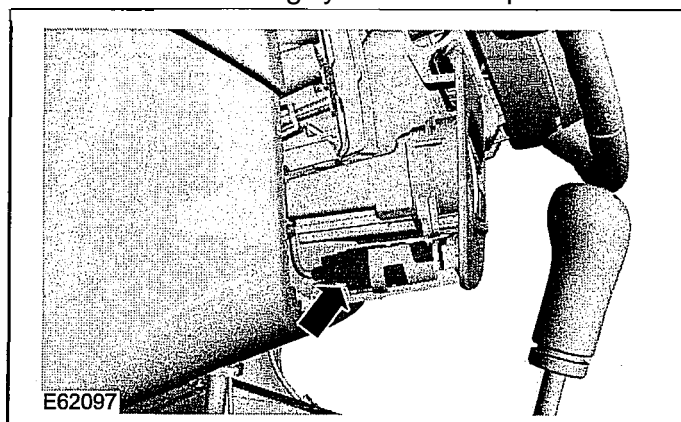


Vehicles with automatic temperature control (EATC)

6. Remove the surround for the air conditioning system control panel and the air conditioning system control panel.

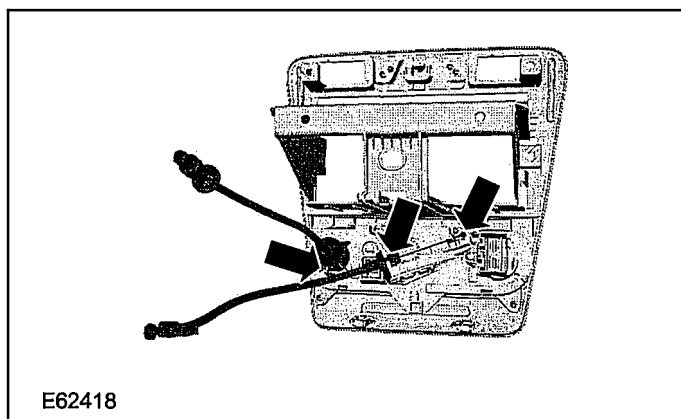
REMOVAL AND INSTALLATION

- Detach the passenger compartment temperature sensor from the surround for the air conditioning system control panel.



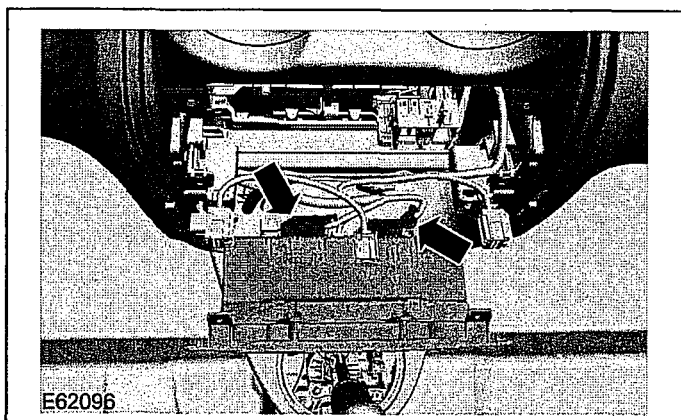
Vehicles with manual temperature control

7. Detach the shaft for the **footwell** ventilation/air guidance air distribution flap and the temperature control air distribution flap actuation cable from the air conditioning system control panel.

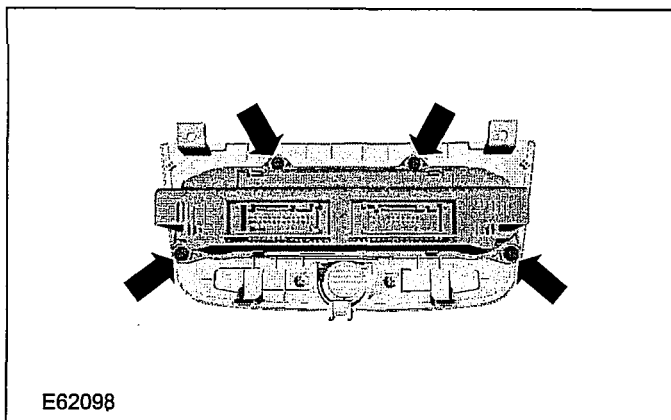


All vehicles

8. Disconnect the connector for the air conditioning system control panel.



9. Remove the air conditioning system control panel.



Installation

■ CAUTIONS:

⚠ Ensure that the shaft of the air **distribution flap engages properly in the adjusting mechanism on the heater / evaporator housing.**

⚠ Do not kink the actuation cable for the temperature flap adjusting mechanism.

To install, reverse the removal procedure.

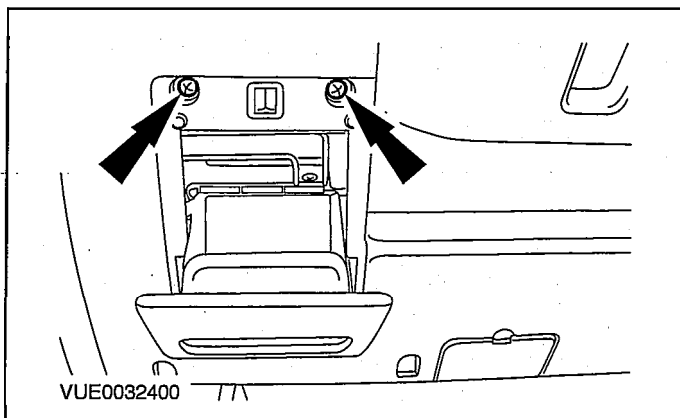
REMOVAL AND INSTALLATION

Blower Motor Switch(33 574 0)

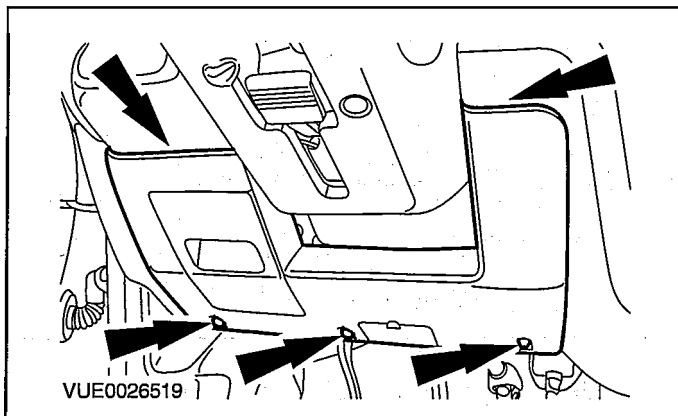
Removal

All vehicles

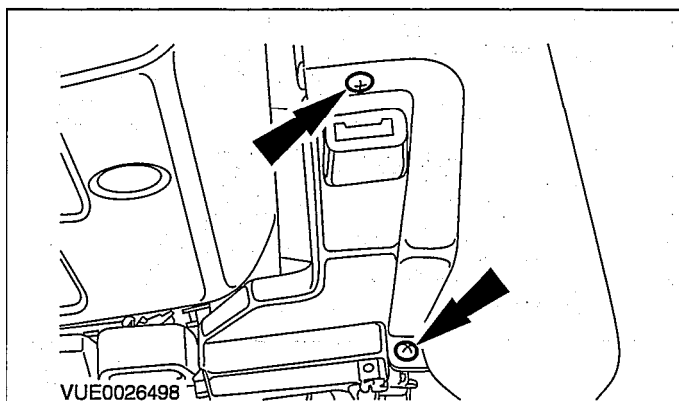
1. Open the stowage compartment and unscrew and remove the bolts from the lower fascialcrash padding trim.



2. Remove the lower fascialcrashpadding trim.



3. Unscrew and remove the left-hand bolts from the fascialcrash padding console.

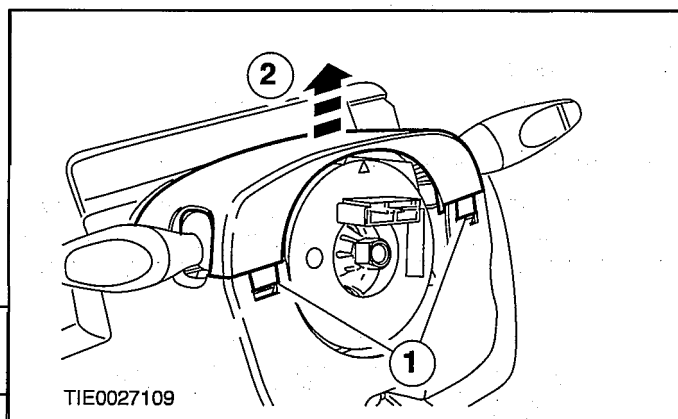


RHD vehicles

4. **NOTE:** Turn the steering wheel to gain access to the clips on the upper steering column trim.

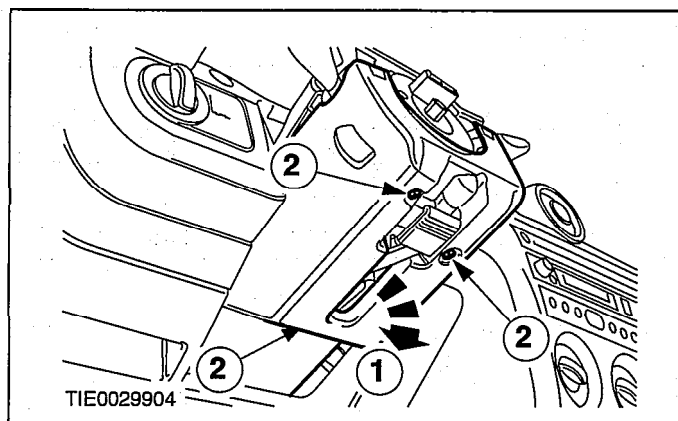
Detach the upper steering column trim from the lower steering column trim (steering wheel shown removed for clarity).

1. Use a narrow screwdriver to release the clips.
2. Detach the trim.



5. Remove the lower steering column trim (steering wheel shown removed for clarity).

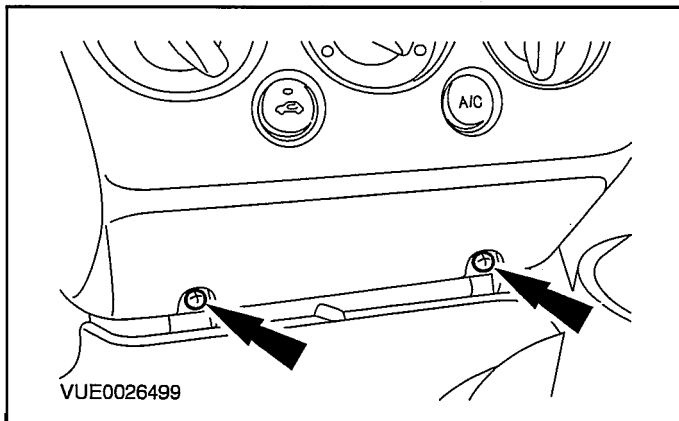
1. Release the steering column locking lever.
2. Unscrew the bolts.



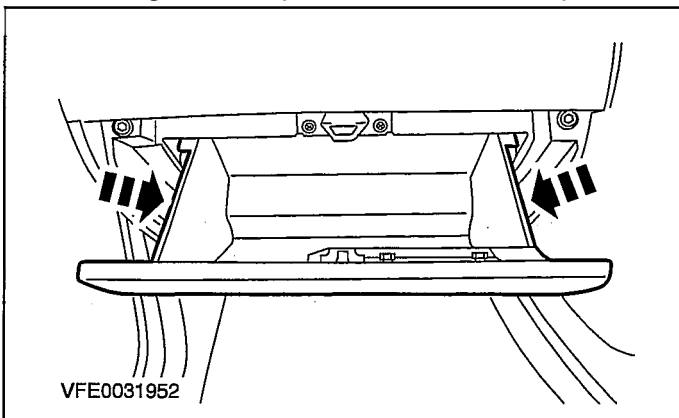
REMOVAL AND INSTALLATION

All vehicles

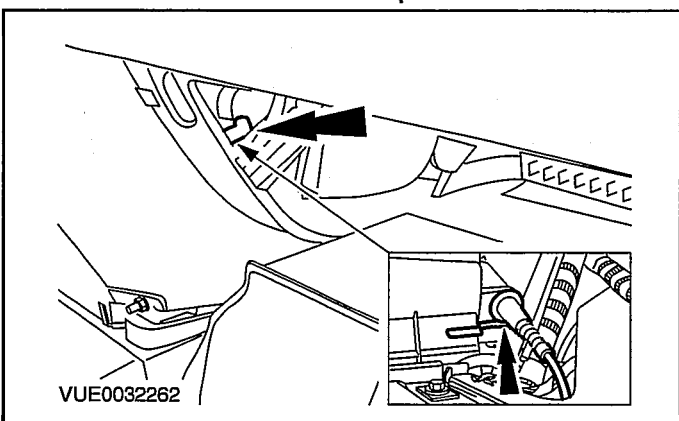
6. Unscrew and remove the lower bolts from the fascialcrash padding console.



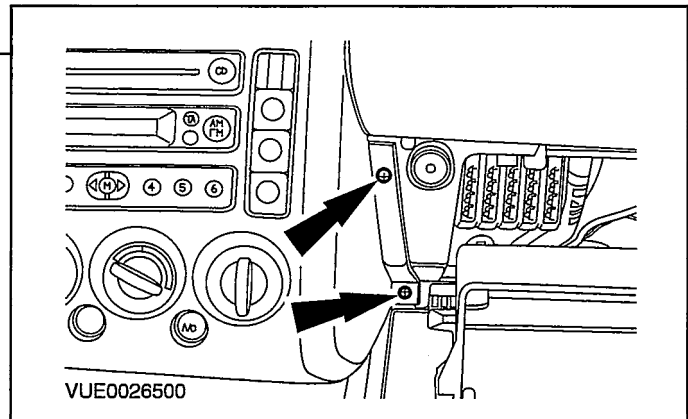
7. Fully open the glove compartment.
 - Press the sides towards the centre to release the glove compartment from the stops.



8. Detach the shaft of the air distribution flap from the adjusting mechanism on the heater core / evaporator housing.
 - Release the catch and pull out the shaft.

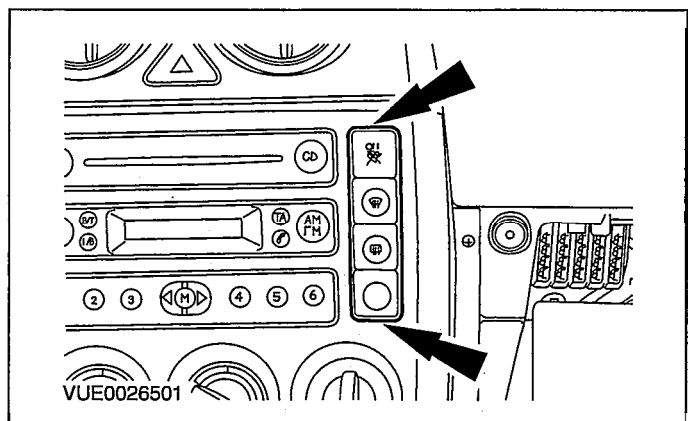


9. Unscrew and remove the right-hand bolts from the fascialcrash padding console.

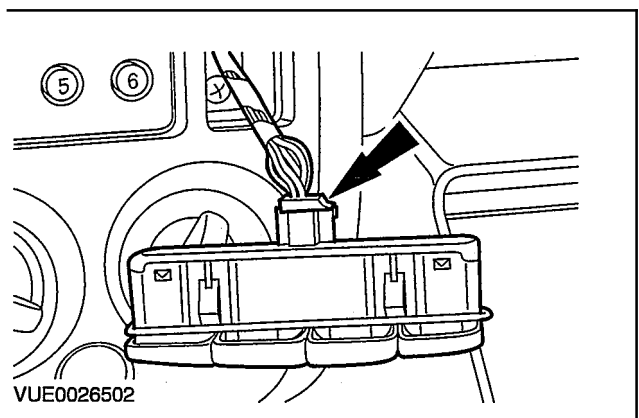


10. **CAUTION:** Support the screwdriver on suitable padding to avoid damaging the fascialcrash padding console.

Detach the switches from the fascialcrash padding console.

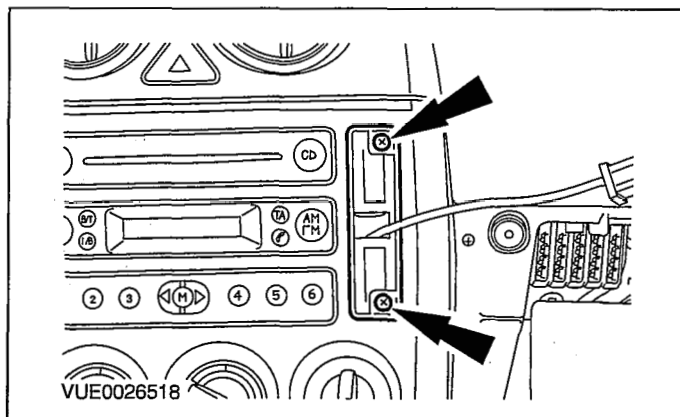


11. **Unplug the connector and remove the switches.**



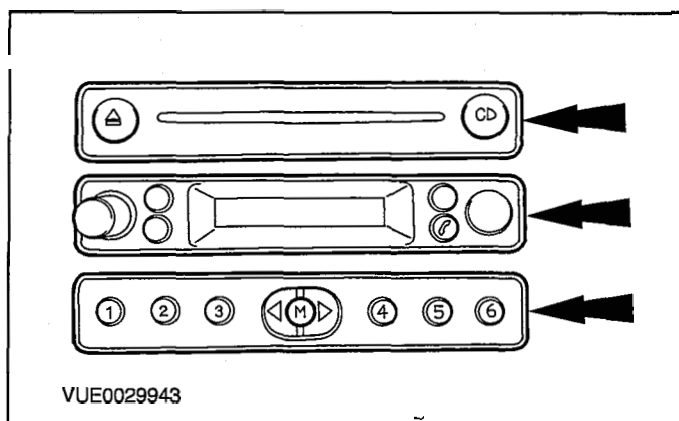
REMOVAL AND INSTALLATION

12. Unscrew and remove the upper bolts from the **fascia/crash** padding console.

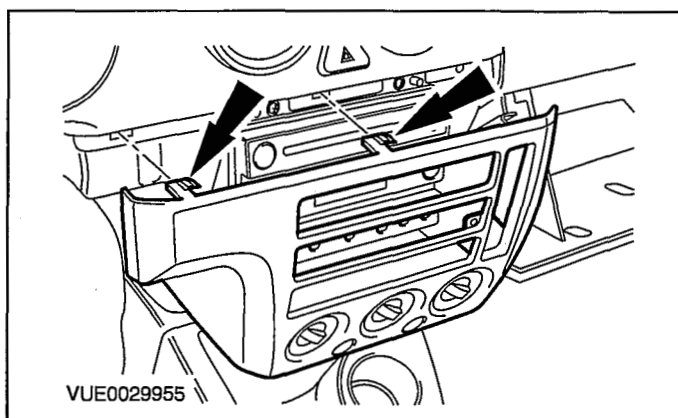


13. **CAUTION:** Use adhesive tape on the three segments of the audio unit to ensure that the audio unit is not damaged during removal of the **fascia/crash** padding console.

Cover the front of the three segments of the audio unit with adhesive tape.

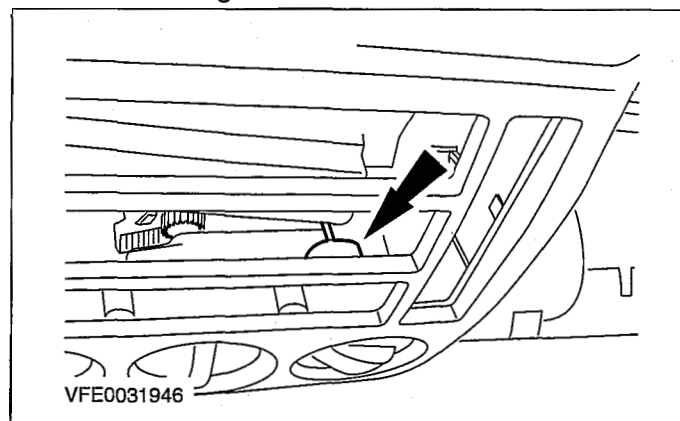


14. Pull the fascialcrash padding console forwards to gain access to the heater/air conditioning control unit.

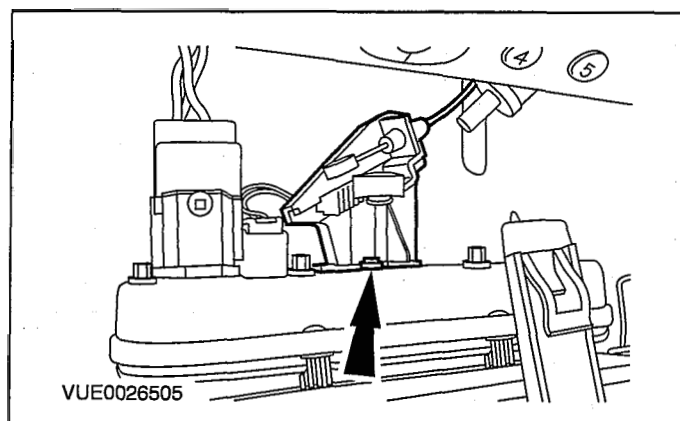


15. Detach the shaft of the air distribution flap from the heater/air conditioning control unit.

- Turn the air distribution rotary control while detaching the shaft.



16. Unscrew and remove the bolt for the temperature flap adjusting mechanism.



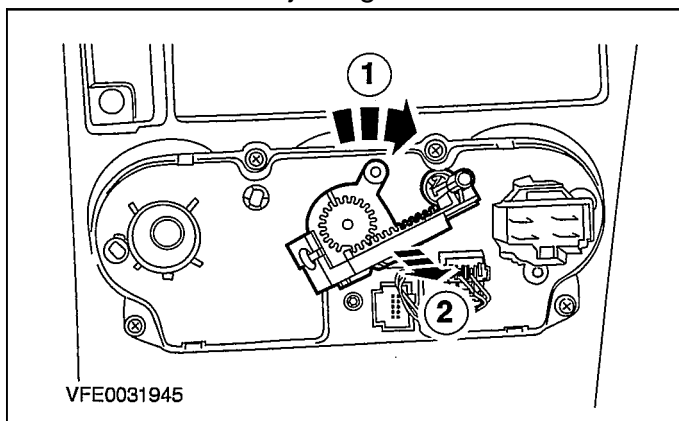
17. **CAUTION:** Do not kink the actuation cable for the temperature flap adjusting mechanism.

Detach the temperature flap adjusting mechanism from the heater/air conditioning control unit (**heater/air** conditioning control unit shown from the rear for clarity).

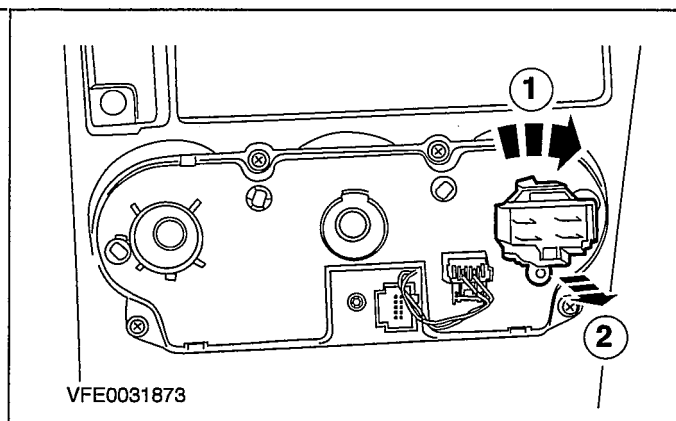
1. Rotate the adjusting mechanism clockwise.

REMOVAL AND INSTALLATION

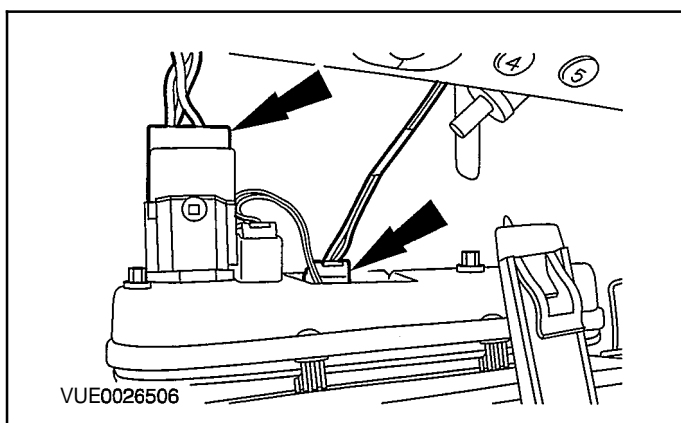
2. Pull out the adjusting mechanism.



2. Pull out the switch.



18. Unplug the connector from the heater/air conditioning control unit and remove the fascia/crash padding console.



Installation

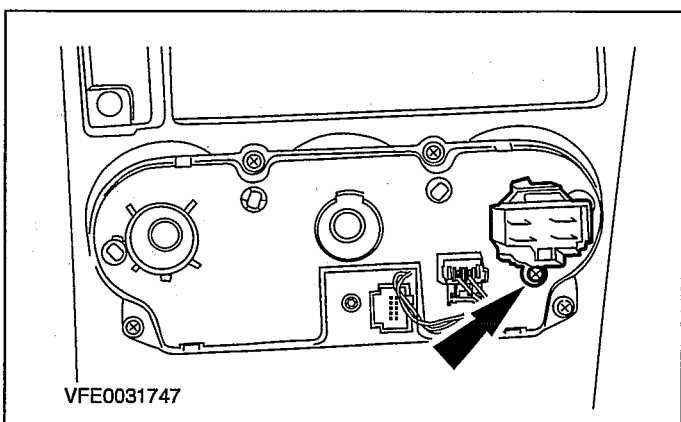
■ CAUTIONS:

⚠ **Ensure** that the shaft of the air distribution flap engages properly in the adjusting mechanism on the heater core / evaporator housing.

⚠ **Do not** kink the actuation cable for the temperature flap adjusting mechanism.

Refit the components in reverse order.

19. Unscrew and remove the bolt from the blower motor switch.



20. Remove the blower motor switch.

■ Rotate the switch clockwise.

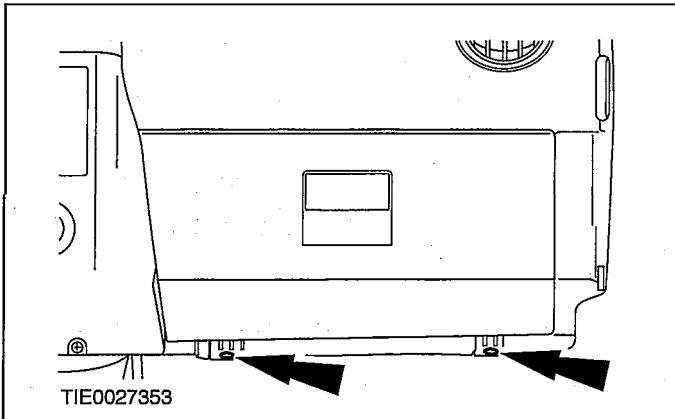
REMOVAL AND INSTALLATION

Air Inlet Blend Door Actuator

Removal

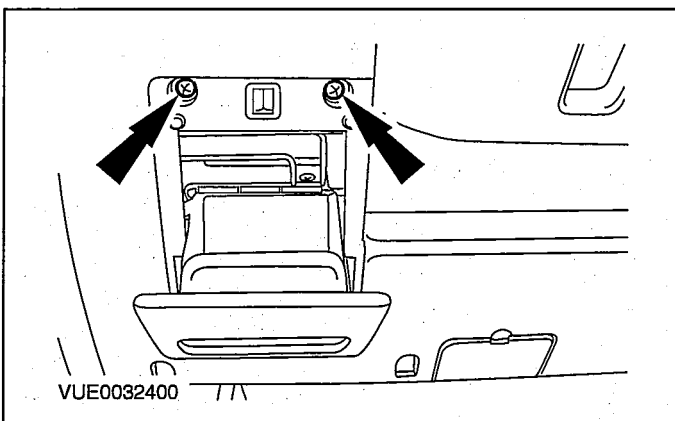
Left-hand drive vehicles.

- Remove the glove compartment.

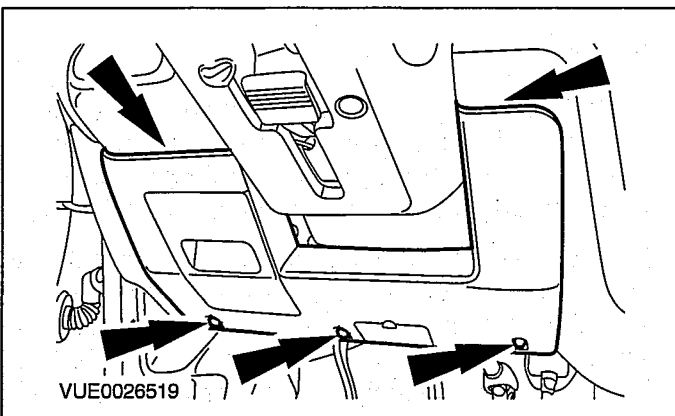


RHD vehicles

- 2. Open the stowage space and remove the screws for the dashboard lower trim.



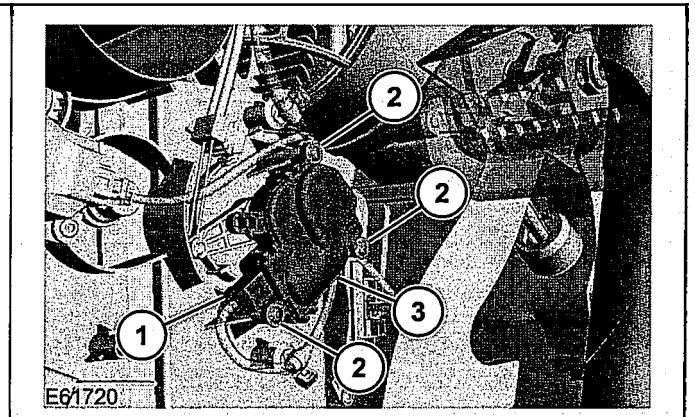
- 3. Detach the dashboard lower trim from the dashboard.



All vehicles

- 4. Remove the actuator - air distribution flap.

1. Disconnect the connector for the air distribution flap actuator.
2. Remove the screws.
3. Remove the air distribution flap actuator from the flap shaft.



Installation

1. **NOTE:** After installing the air distribution flap actuator, initialise the air distribution flap actuator using the air conditioning system control panel. To do this, press the "Footwell" and "OFF" buttons simultaneously, then press the "Auto" button.

To install, reverse the removal procedure.

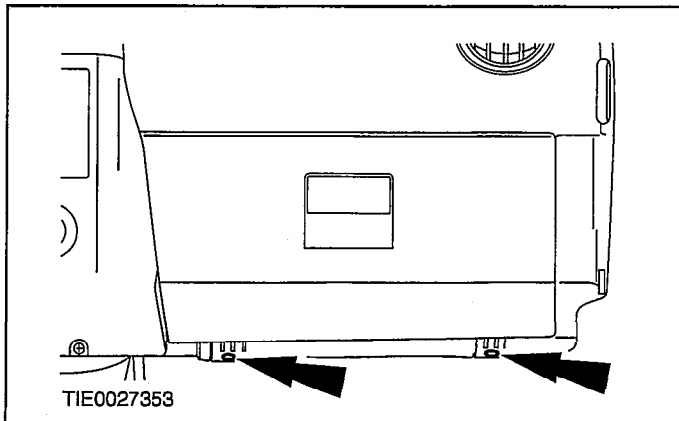
REMOVAL AND INSTALLATION

Temperature Blend Door Actuator(34 590 0)

Removal

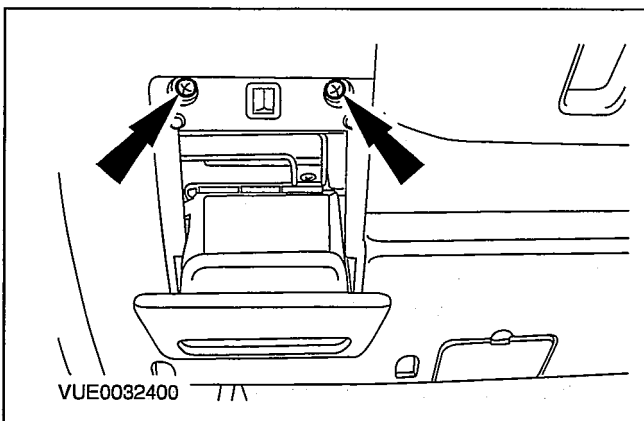
Left-hand drive vehicles.

- Remove the glove compartment.

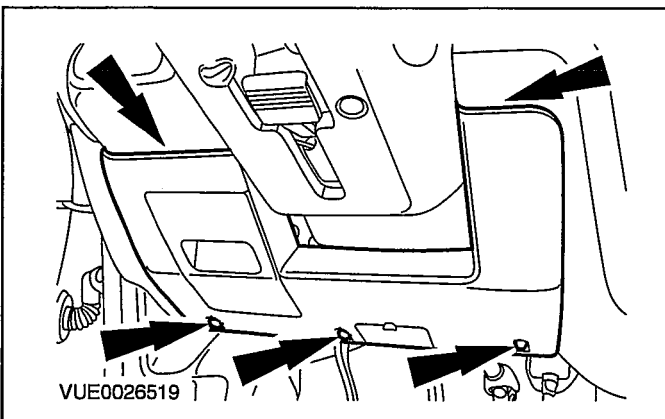


RHD vehicles

2. Open the stowage space and remove the screws for the dashboard lower trim.

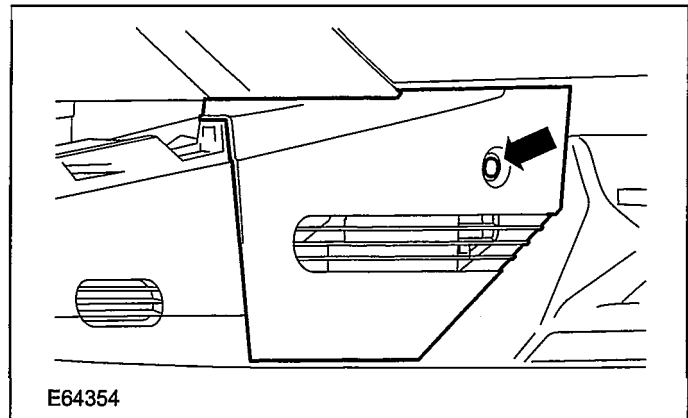


3. Detach the dashboard lower trim from the dashboard.



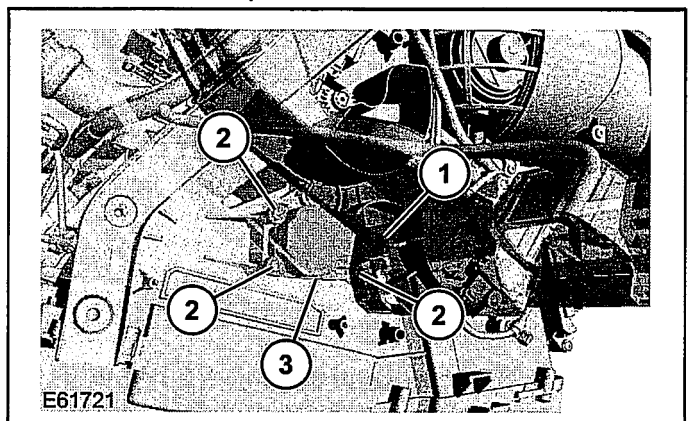
All vehicles

4. Detach the centre console side trim on the right-hand side.



5. Remove the temperature control flap actuator.

1. Disconnect the electrical connector of the temperature control flap actuator.
2. Remove the screws.
3. Pull off the temperature control flap actuator from the flap shaft.



Installation

1. **NOTE:** During installation of the temperature control flap actuator, ensure that the end positions of both toothed segments are correctly positioned in relation to each other.

NOTE: After installing the temperature control flap actuator, initialize the temperature control flap actuator using the air conditioning system control panel. To do this, press the "Footwell" and "OFF" buttons simultaneously, then press the "Auto" button.

To install, reverse the removal procedure.

REMOVAL AND INSTALLATION

Footwell Vent/Duct Blend Door Actuator

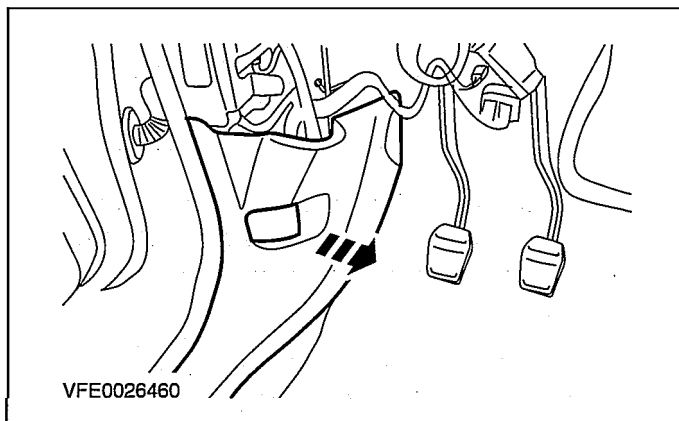
Removal

1. Remove the instrument panel.

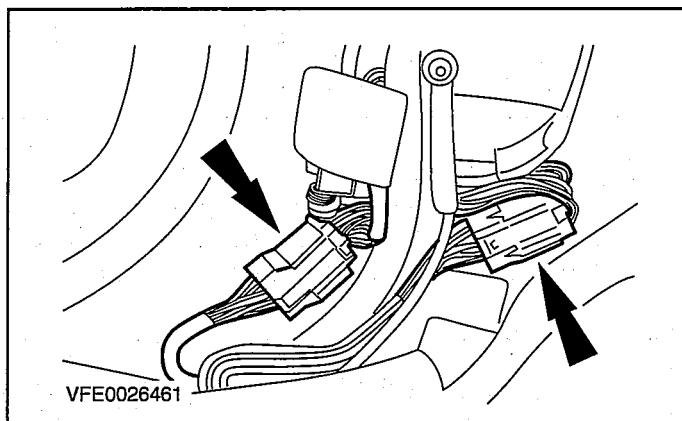
For additional information, refer to:

Instrument panel (501-12, Removal and Installation).

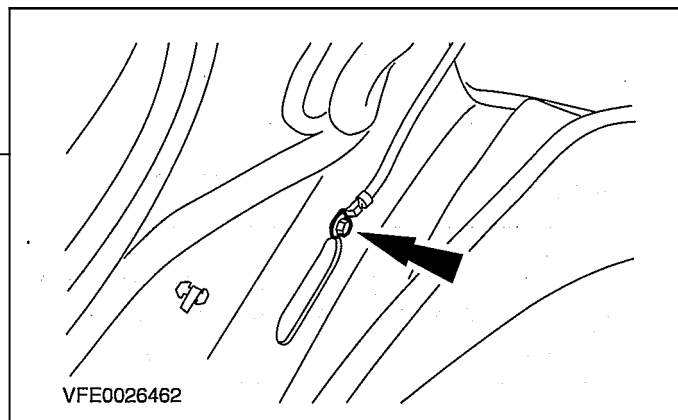
2. Unclip part of the left-hand **footwell** trim.



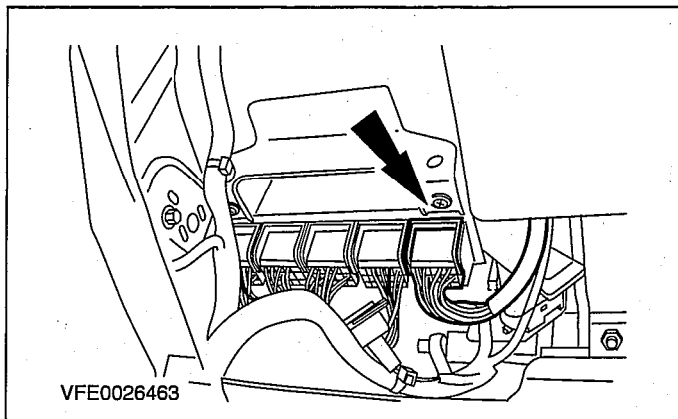
3. Disconnect the left-hand connector of the instrument panel wiring harness (the **footwell** trim is shown removed for clarity).



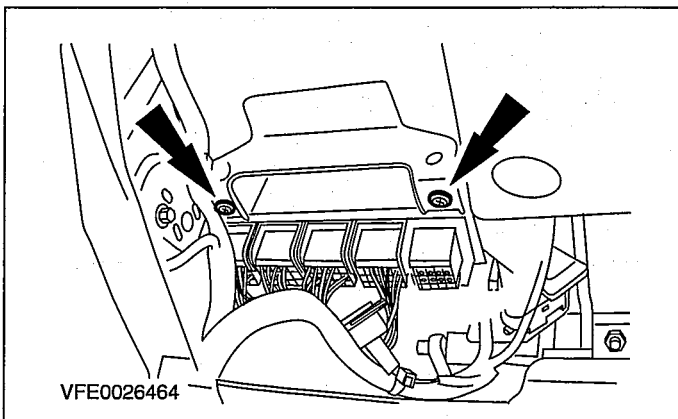
4. Remove the ground strap bolt in the left-hand footwell.



5. Disconnect the connector of the generic electronic module (GEM).

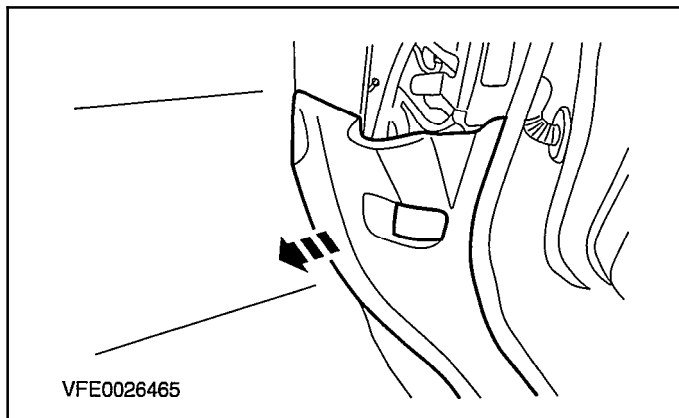


6. Detach the GEM from the dashboard crossmember and lay it to one side.

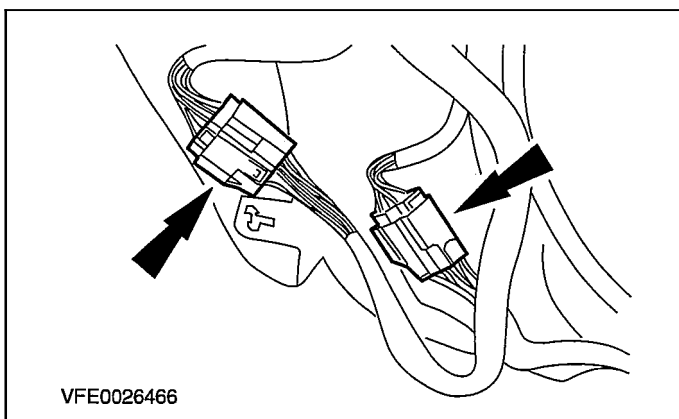


REMOVAL AND INSTALLATION

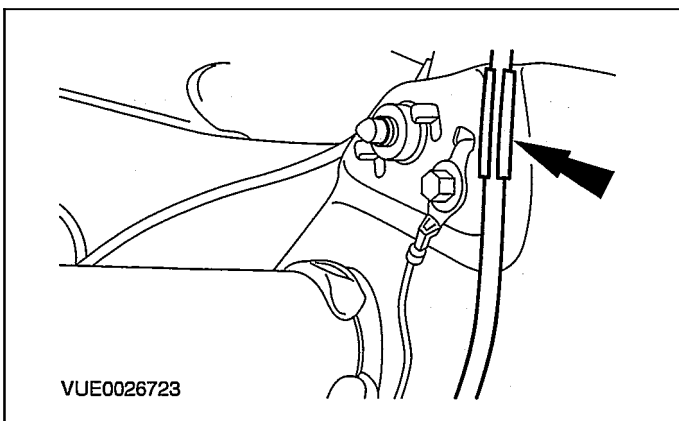
7. Unclip part of the right-hand **footwell** trim.



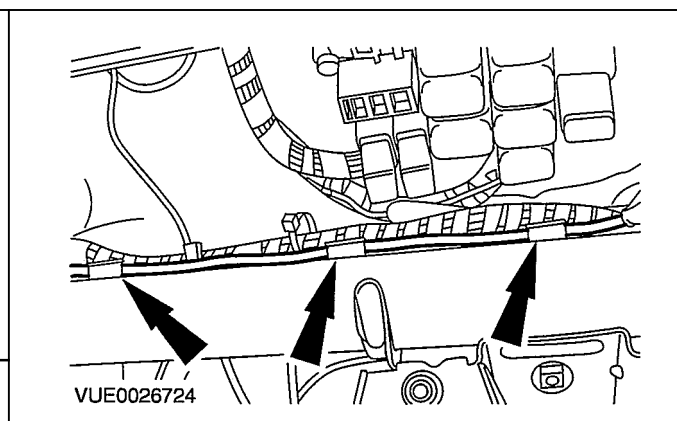
8. Disconnect the right-hand connector of the instrument panel wiring harness (the **footwell** trim is shown removed for clarity).



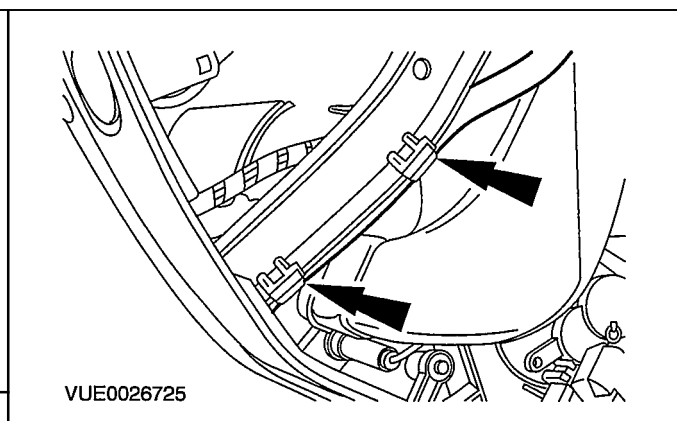
9. Detach the antenna cable from the right-hand upper clip on the dashboard crossmember.



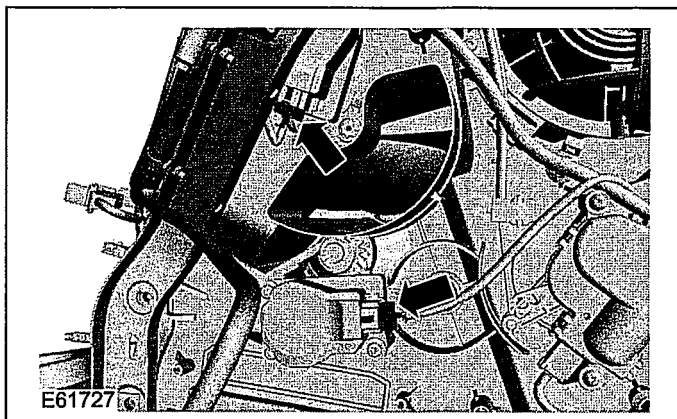
10. Detach the antenna cable from the right-hand lower clips on the dashboard crossmember.



11. Detach the antenna cable from the centre clips on the dashboard crossmember.

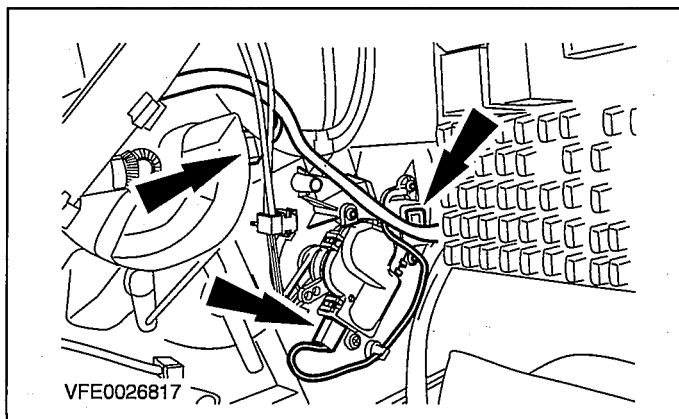


12. Remove the connector of the air duct actuator for the **footwell ventilation/air** distribution flap and the connector of the temperature control actuator for the air distribution flap.

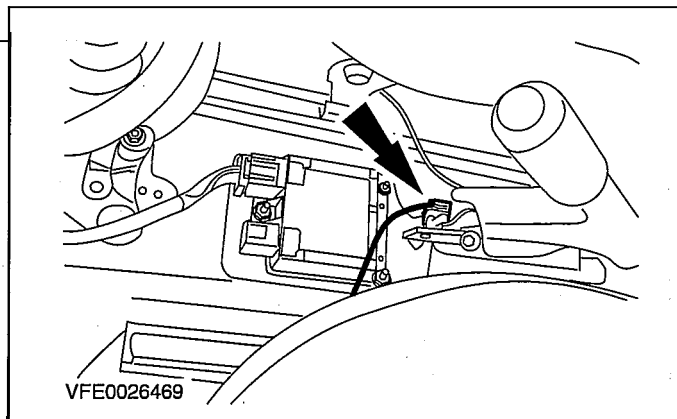


REMOVAL AND INSTALLATION

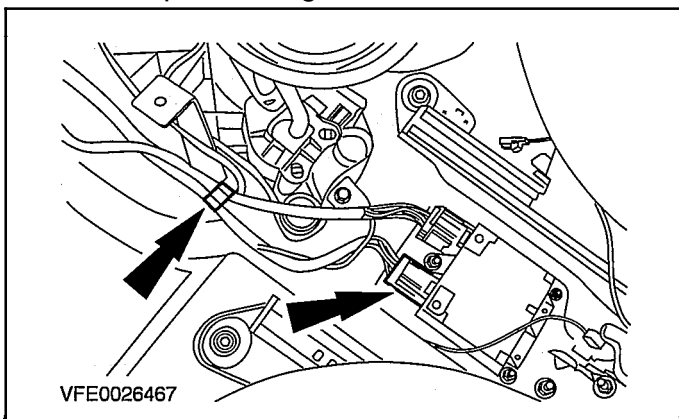
13. Remove the blower motor connector, blower motor resistor connector and air distribution flap actuator connector.



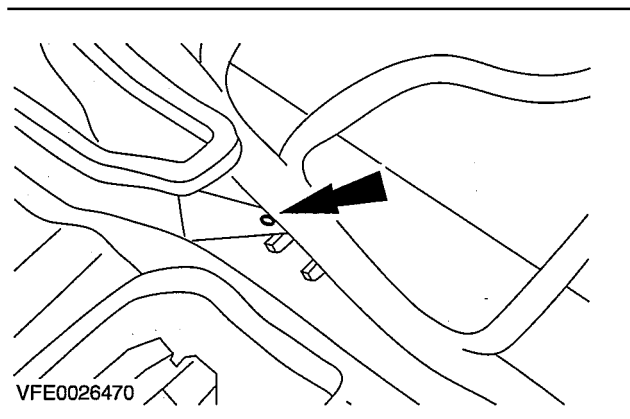
16. Disconnect the connector of the handbrake warning lamp switch.



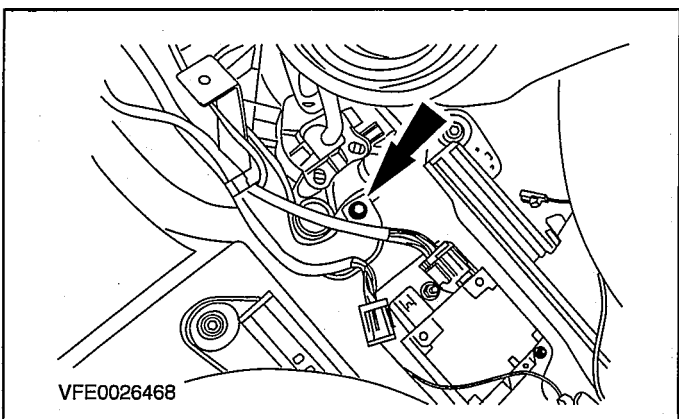
14. Disconnect the **airbag** module connector.
- Unclip the wiring harness.



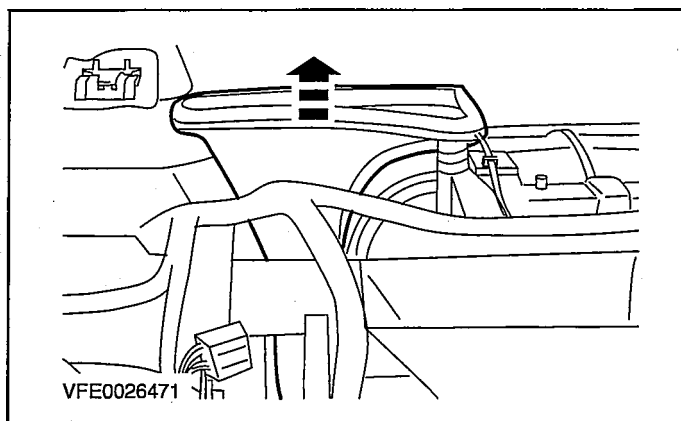
17. Remove the bolts of the windshield air ducts (left-hand side shown).



15. Unscrew and remove the ground cable bolt from the **airbag** module.

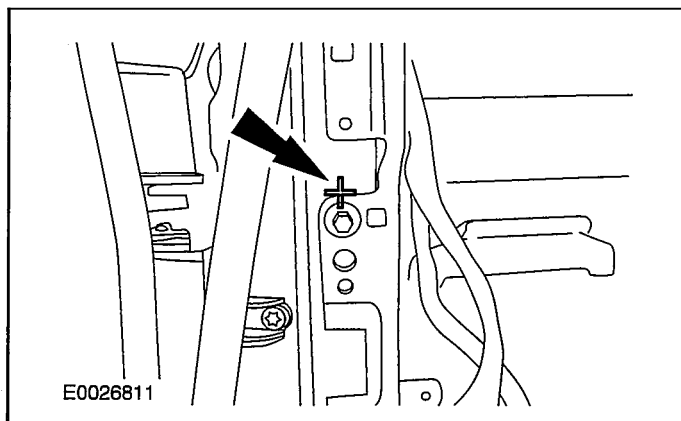


18. Remove the windshield air ducts (left-hand side shown).

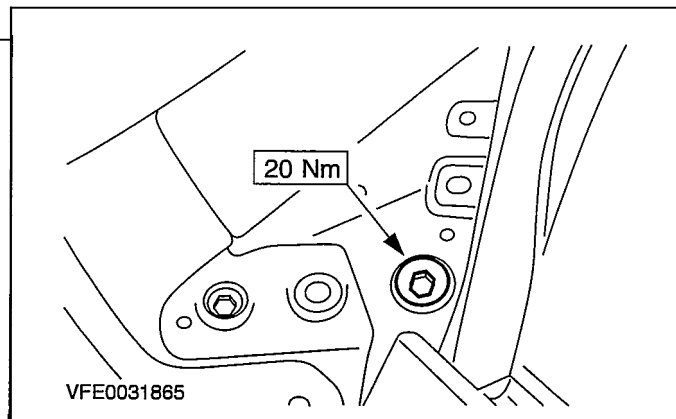


REMOVAL AND INSTALLATION

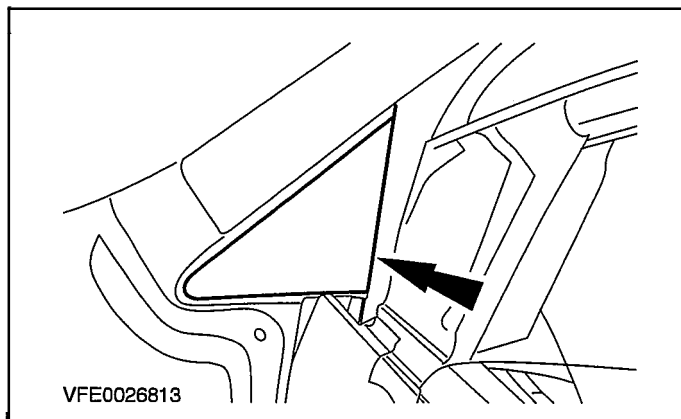
19. Mark the position of the dashboard crossmember relative to the A-pillars (left-hand side shown).



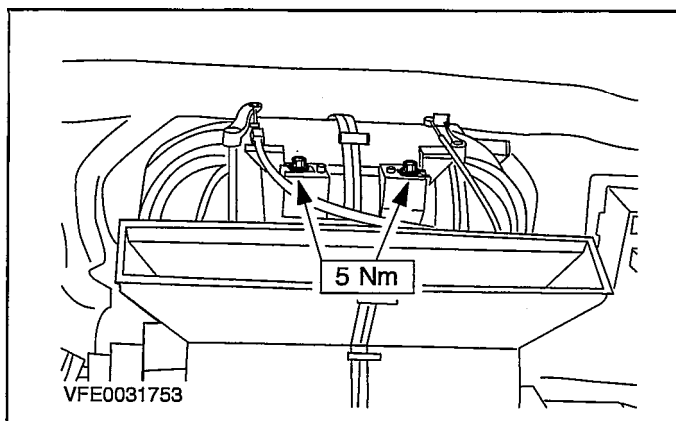
22. Remove the side bolts of the dashboard crossmember.



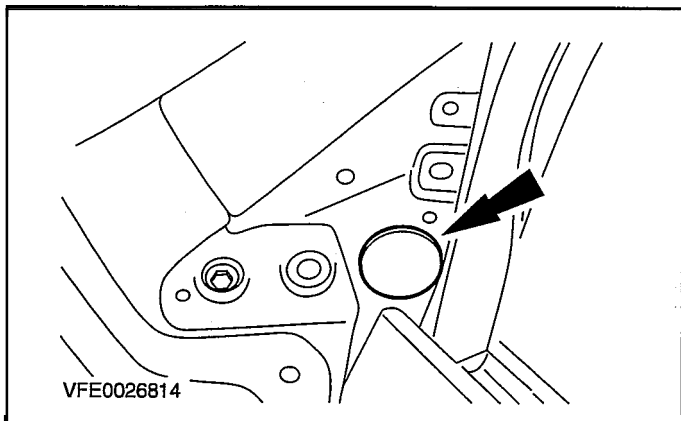
20. Remove the A-pillar outer trims (left-hand side shown).



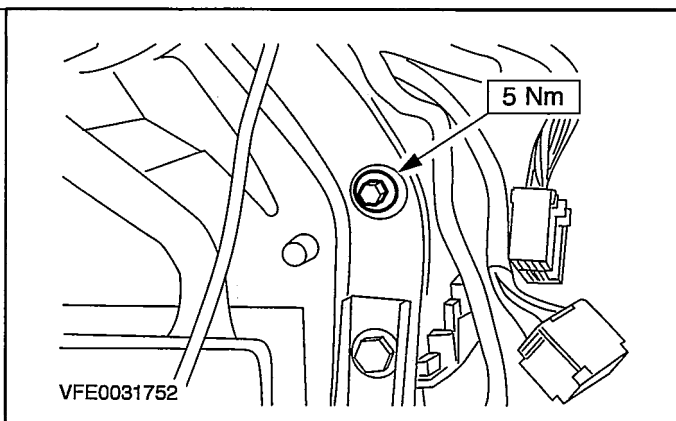
23. Remove the upper bolts of the heater core evaporator housing.



21. Remove the caps (left side shown).

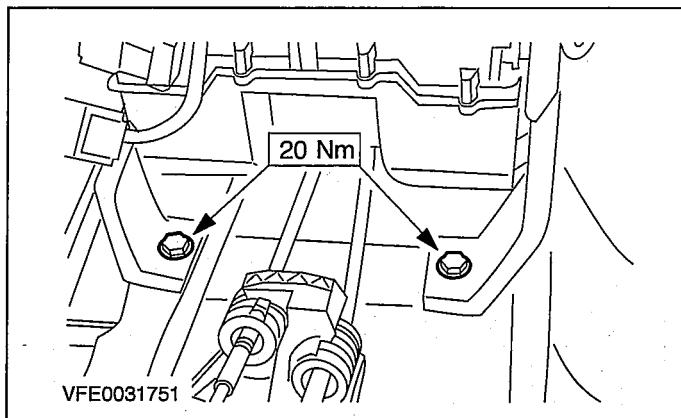


24. Remove the side bolts from the heater core evaporator housing (left side shown).

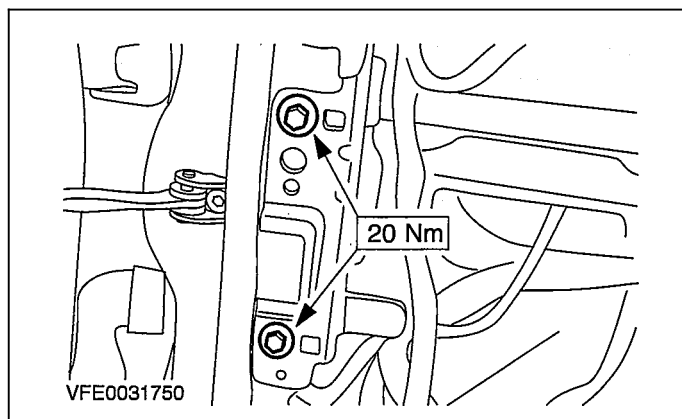


REMOVAL AND INSTALLATION

- 25. Remove the lower bolts of the dashboard crossmember.**

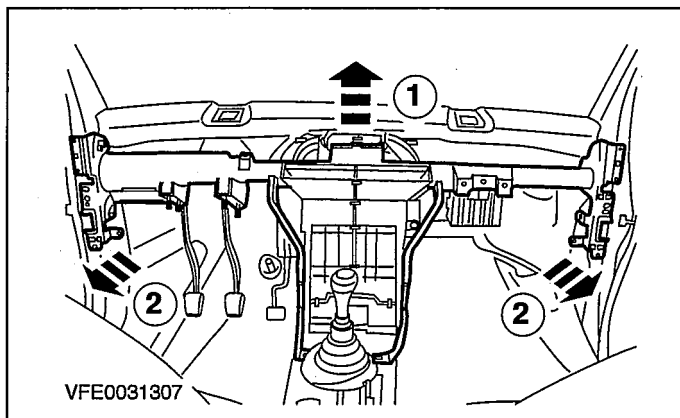


- 26. Remove the dashboard crossmember upper bolts.**



- 27. Remove the dashboard crossmember.**

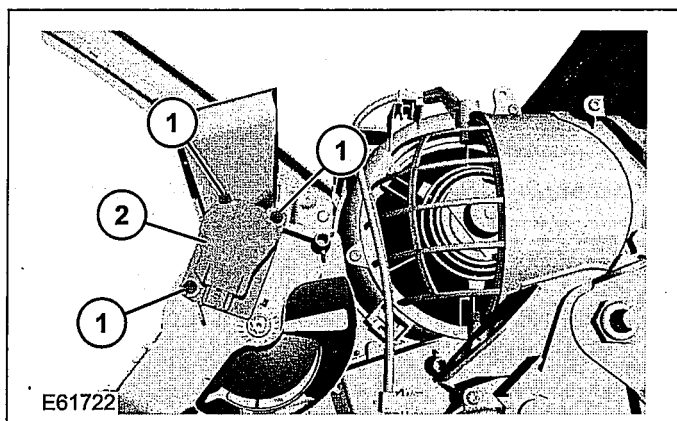
1. Lift the dashboard crossmember.
2. Pull the dashboard crossmember rearwards.



- 28. Remove the air duct actuator for the footwell ventilation/air distribution flap.**

1. Remove the screws.

2. Remove the air duct actuator for the footwell ventilation/air distribution flap from the flap shaft.



Installation

- To install, reverse the removal procedure.

REMOVAL AND INSTALLATION**Center Register Air Discharge Temperature Sensor****Removal**

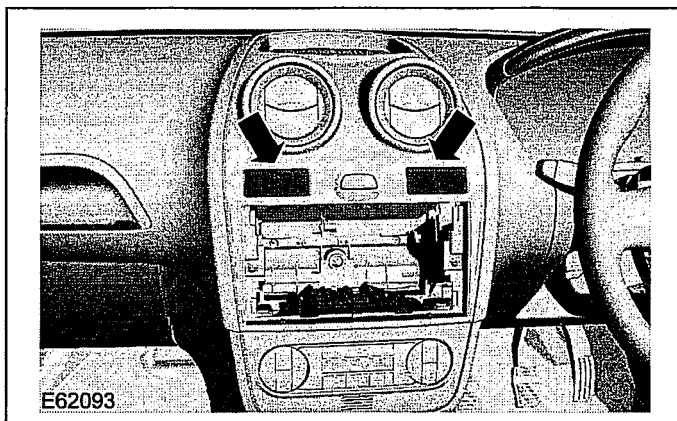
1. Detach the audio unit.

For additional information, refer to:
Audio Unit - Vehicles Built From: 1012005
(415-01, Removal and Installation).

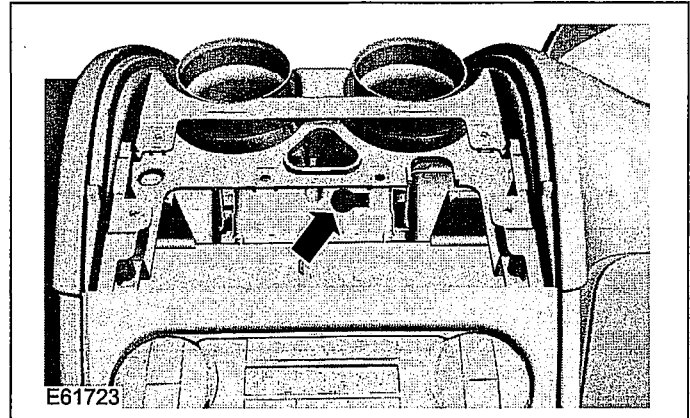
2. **⚠ CAUTION:** Support the screwdriver on suitable padding to avoid damaging the dashboard console.

Remove the dashboard console switch.

1. Detach the connector.



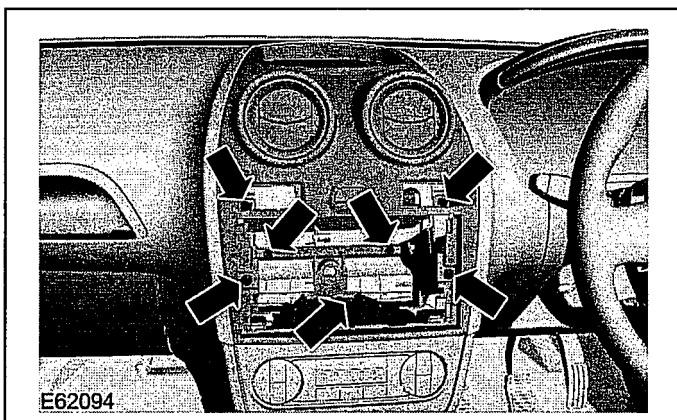
- Turn the sensor clockwise through 90 degrees and pull it out of the heater core/evaporator housing.

**Installation**

- To install, reverse the removal procedure.

3. Remove the dashboard console.

- Disconnect the hazard warning switch connector.



4. Remove the air outlet temperature sensor, centre nozzles.

REMOVAL AND INSTALLATION**Footwell Air Discharge Temperature Sensor****Removal**

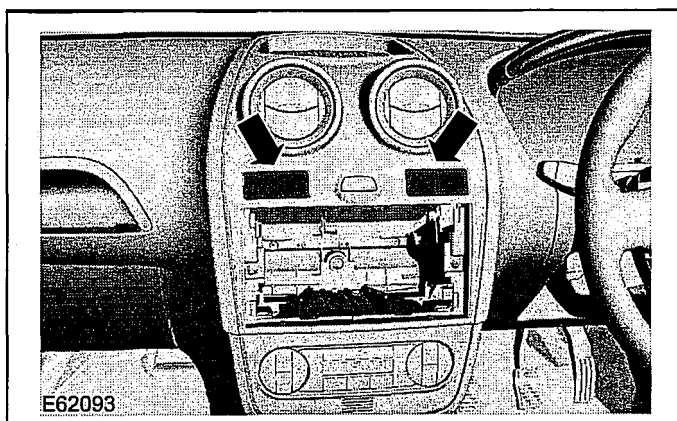
1. Detach the audio unit.

For additional information, refer to:
Audio Unit - Vehicles Built From: **0812005**
(415-01. Removal and Installation).

2. **CAUTION:** Support the screwdriver on suitable padding to avoid damaging the dashboard console.

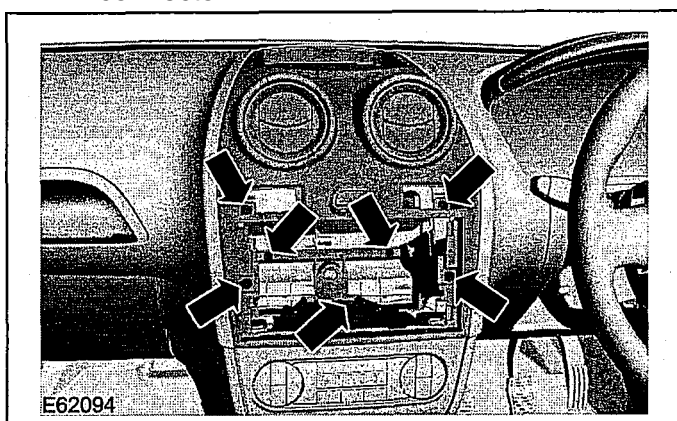
Remove the dashboard console switch.

1. Detach the connector.

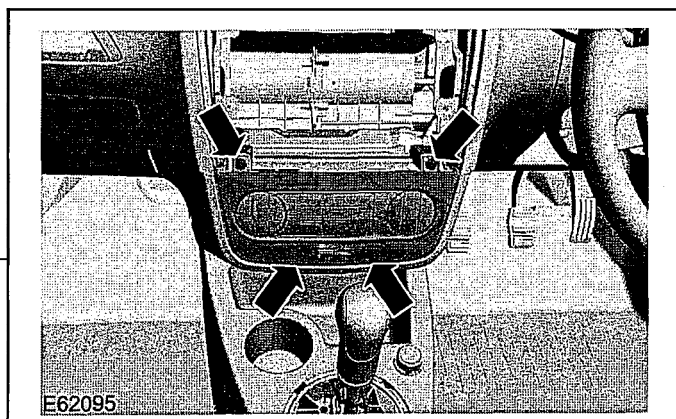


3. Remove the dashboard console.

- Disconnect the hazard warning switch connector.

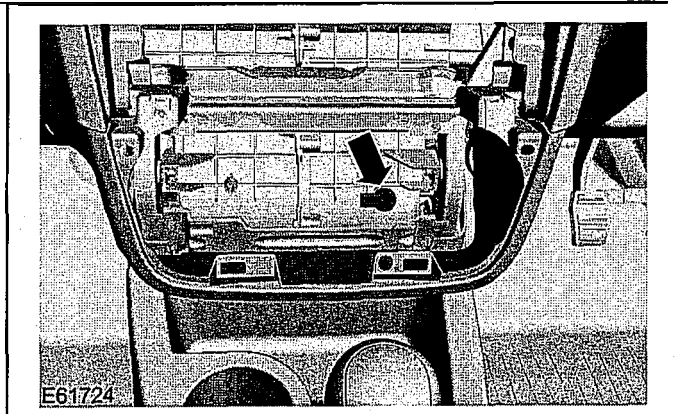


4. Detach the surround for the air conditioning system control panel and the air conditioning system control panel from the dashboard and pull forwards.



5. Remove the air outlet temperature sensor, footwell.

- Turn the sensor clockwise through 90 degrees and pull it out of the heater core evaporator housing.

**Installation**

1. To install, reverse the removal procedure.

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SECTION 413-00 Instrument Cluster and Panel Illumination

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

DIAGNOSIS AND TESTING

Instrument Cluster and Panel Illumination — Vehicles Built Up To: 1012005.....	413-00-2
Inspection and Verification.....	413-00-2
Symptom Chart.....	413-00-2
Pinpoint Tests.....	413-00-3
Instrument Cluster and Panel Illumination — Vehicles Built From: 1012005.....	413-00-13
Inspection and Verification.....	413-00-13
Symptom Chart.....	413-00-13
Pinpoint Tests.....	413-00-14

DIAGNOSIS AND TESTING

Instrument Cluster and Panel Illumination — Vehicles Built Up To: 1012005

.Refer to Wiring Diagrams Section 413-00, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection Chart

Electrical
- Fuse(s)
- Wiring harness
- Electrical connector(s)
- Light emitting diode(s) LED(s)
- Bulb(s)

Electrical
- Switch(es)
- Instrument cluster
- Audio unit
- Navigation system display
- Climate control assembly
- Digital versatile disc (DVD) player
- Selector lever
- Gearshift lever

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
• The control illumination is inoperative	• Fuse. • Headlamp switch. • Circuit.	• GO to Pinpoint Test A.
• The Instrument cluster illumination is inoperative	• Circuit(s). • Instrument cluster.	• GO to Pinpoint Test B.
• The climate control/integrated control panel illumination is inoperative - vehicles without air conditioning (A/C)	• Fuse(s). • Circuit(s). • Climate control assembly.	• GO to Pinpoint Test C.
• The climate control/integrated control panel illumination is inoperative - vehicles with A/C	• Fuse(s). • Circuit(s). • Climate control assembly.	• GO to Pinpoint Test D.
• The audio unit illumination is inoperative	• Fuse(s). • Circuit(s). • Audio unit.	• GO to Pinpoint Test E.
• The hazard lamp switch illumination is inoperative	• Fuse(s). • Circuit(s). • Hazard lamp switch.	• GO to Pinpoint Test F.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The multifunction switch assembly illumination is inoperative (air bag deactivation warning, stability assist, front window defrost or rear window defrost) 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Multifunction switch assembly. 	<ul style="list-style-type: none"> GO to Pinpoint Test G.
<ul style="list-style-type: none"> The navigation system display module illumination is inoperative 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Navigation System Display Module. 	<ul style="list-style-type: none"> GO to Pinpoint Test H.
<ul style="list-style-type: none"> The selector lever illumination is inoperative - vehicles with 4-speed automatic transaxle (AW81-40LE) 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Selector lever. 	<ul style="list-style-type: none"> GO to Pinpoint Test I.
<ul style="list-style-type: none"> The gearshift lever illumination is inoperative - vehicles with automated gearshift 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Gearshift lever. 	<ul style="list-style-type: none"> GO to Pinpoint Test J.
<ul style="list-style-type: none"> The DVD player illumination is inoperative 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). DVD player. 	<ul style="list-style-type: none"> GO to Pinpoint Test K.

Pinpoint Tests**PINPOINT TEST A : THE CONTROL ILLUMINATION IS INOPERATIVE**

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK THE OPERATION OF THE PARKING LAMPS	
	<p><input checked="" type="checkbox"/> Place the side lamps in the ON position.</p> <p>Does the parking lamps and license plate lamps illuminate?</p> <p>→ Yes INSTALL a new headlamp switch. TEST the system for normal operation.</p> <p>→ No Diagnose the exterior lighting system. REFER to: Parking, Rear and License Plate Lamps (417-01 Exterior Lighting, Diagnosis and Testing). TEST the system for normal operation.</p>

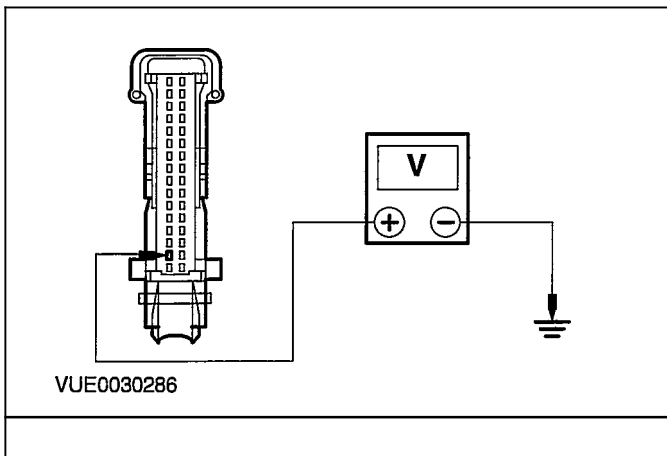
PINPOINT TEST B : THE INSTRUMENT CLUSTER ILLUMINATION IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
BI: CHECK THE INSTRUMENT CLUSTER FOR POWER	
	<p><input checked="" type="checkbox"/> Disconnect Instrument Cluster C332.</p> <p><input type="checkbox"/> Turn the headlamp switch to the ON position.</p>

DIAGNOSIS AND TESTING

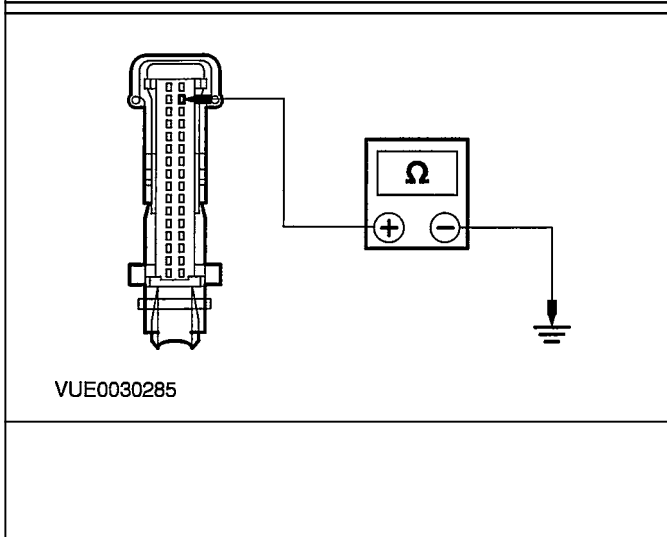
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



- 3 Measure the voltage between the instrument cluster C332 pin 15, circuit 29S-LK19 (OGIBU), harness side and ground.
- Is the voltage greater than 10 volts?
 - **Yes**
GO to B2.
 - **No**
REPAIR circuit 29S-LK19 (OGIBU). TEST the system for normal operation.

B2: CHECK THE INSTRUMENT CLUSTER FOR GROUND



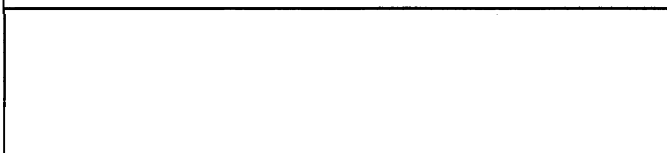
- 1 Measure the resistance between instrument the instrument cluster C332 pin 18, circuit 31-GG11 (BK), harness side and ground.
- Is the resistance less than 5 ohms
 - **Yes**
INSTALL a new instrument cluster.
REFER to: Instrument Cluster - Vehicles Built Up To: 1012005 (413-01 instrument Cluster, Removal and Installation).
TEST the system for normal operation.
 - **No**
REPAIR circuit 31-GG11 (BK). TEST the system for normal operation.

PINPOINT TEST C : THE CLIMATE CONTROL/INTEGRATED CONTROL PANEL ILLUMINATION IS INOPERATIVE - VEHICLES WITHOUT AIR CONDITIONING (A/C)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

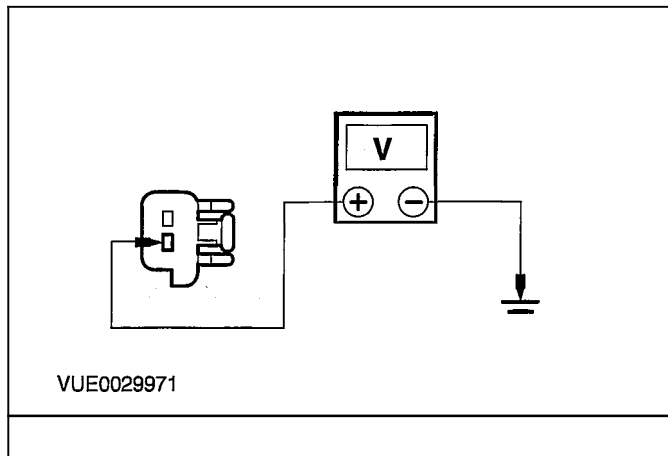
CI: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR POWER



- 1 Disconnect Climate Control Assembly Illumination C620.
- ☐ Turn the headlamp switch to the ON position.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

Measure the voltage between the climate control assembly illumination C620 pin 1, circuit 29S-LH27 (OGIGN), harness side and ground.

- Is the voltage greater than 10 volts?

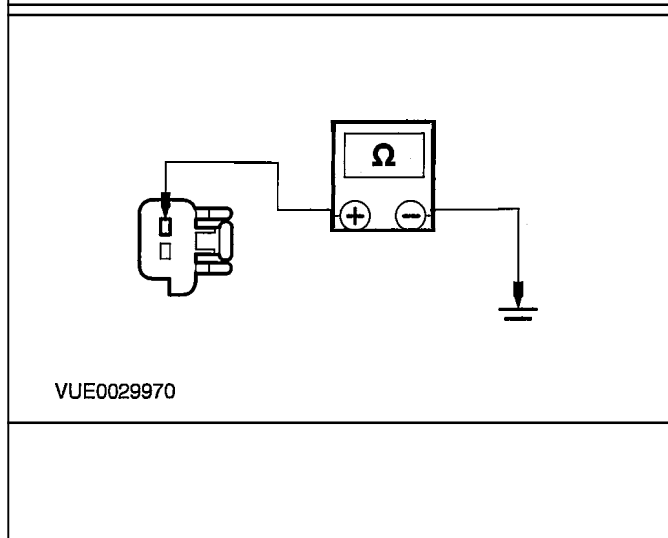
→ **Yes**

GO to C2.

→ **No**

REPAIR circuit 29S-LH27 (OGIGN). TEST the system for normal operation.

C2: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR GROUND



Measure the resistance between climate control assembly illumination C620 pin 2, circuit 31-LH27 (BK), harness side and ground.

- Is the resistance less than 5 ohms?

→ **Yes**

INSTALL a new climate control assembly.

REFER to: Climate Control Assembly (412-04 Control Components, Removal and Installation).

TEST the system for normal operation.

→ **No**

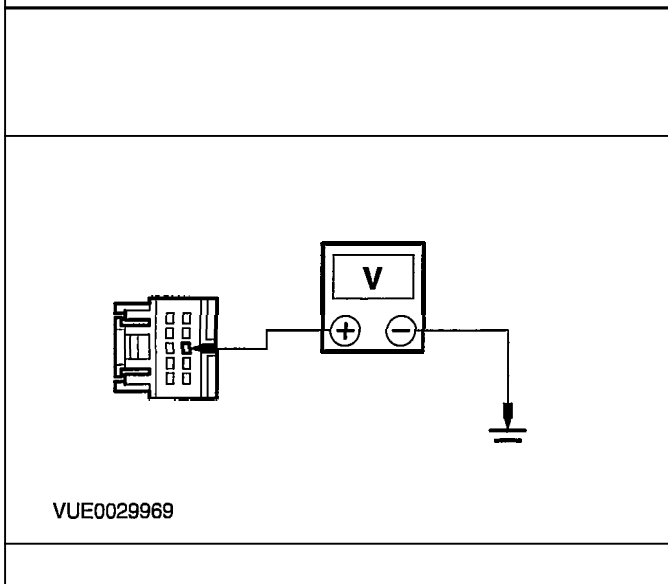
REPAIR circuit 31-LH27 (BK). TEST the system for normal operation.

PINPOINT TEST D : THE CLIMATE CONTROL/INTEGRATED CONTROL PANEL ILLUMINATION IS INOPERATIVE - VEHICLES WITH A/C

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D1: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR POWER



☐ Disconnect Climate Control Assembly C302.

Turn the headlamp switch to the ON position.

Measure the voltage between the climate control assembly C302 pin 8, circuit 29S-LH27 (OGIGN), harness side and ground.

- Is the voltage greater than 10 volts?

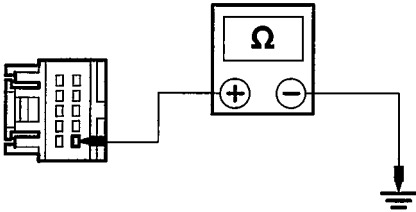
→ **Yes**

GO to D2.

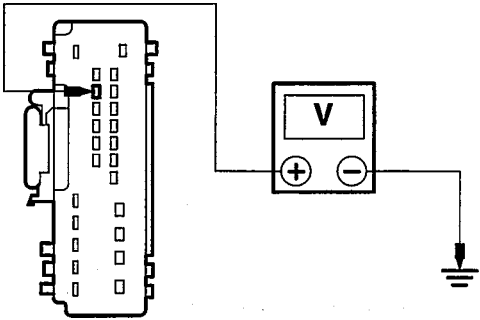
→ **No**

REPAIR circuit 29S-LH27 (OGIGN). TEST the system for normal operation.

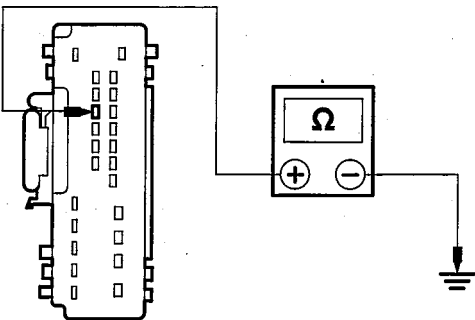
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D2: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR GROUND	
 <p>VUE0029968</p>	<ol style="list-style-type: none"> 1 Measure the resistance between climate control assembly C302 pin 10, circuit 31-LH27 (BK), harness side and ground. <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new climate control assembly. REFER to: Climate Control Assembly (412-04 Control Components, Removal and Installation). TEST the system for normal operation.</p>
	<p>→ No REPAIR circuit 31-LH27 (BK). TEST the system for normal operation.</p>

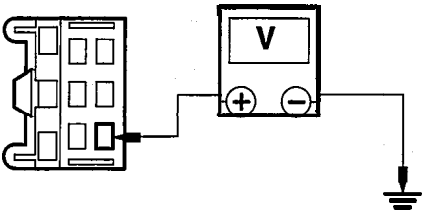
PINPOINT TEST E : THE AUDIO UNIT ILLUMINATION IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: CHECK THE AUDIO UNIT ILLUMINATION FOR POWER	
 <p>VUE0029967</p>	<ol style="list-style-type: none"> 1 Disconnect Audio Unit C344. 2 Turn the headlamp switch to the ON position.
	<ol style="list-style-type: none"> 3 Measure the voltage between the audio unit C344 pin 3, circuit 29S-LK34 (OGIBK) or vehicles with cellular phone, circuit 29S-LK34 (VT/YE), harness side and ground. <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to E2.</p> <p>→ No REPAIR circuit 29S-LK34 (OGIBK). TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS	RESULTS	ACTIONS
E2: CHECK THE AUDIO UNIT ILLUMINATION FOR GROUND			
 VUE0029966	<div><input type="checkbox"/> Measure the resistance between the audio unit C344 pin 4, circuit 31-LK34 (BK), harness side and ground.</div> <div><ul style="list-style-type: none">Is the resistance less than 5 ohms?</div> <div><div>→ Yes</div><div>INSTALL a new audio unit.</div><div>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</div><div>TEST the system for normal operation.</div></div> <div><div>→ No</div><div>REPAIR circuit 31-LK34 (BK). TEST the system for normal operation.</div></div>		

PINPOINT TEST F : THE HAZARD LAMP SWITCH ILLUMINATION IS INOPERATIVE

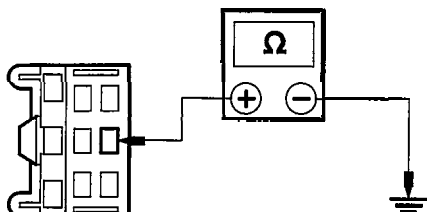
TEST CONDITIONS	DETAILS	RESULTS	ACTIONS
F1: CHECK THE HAZARD LAMP SWITCH ILLUMINATION FOR POWER			
 VUE0030290	<div><div>1</div> Disconnect Hazard Lamp Switch C321.</div>		
	<div><div>2</div> Turn the headlamp switch to the ON position.</div>		
	<div><div>3</div> Measure the voltage between the hazard lamp switch C321 pin 6, circuit 29S-LH54 (OGIGN), harness side and ground.</div> <div><ul style="list-style-type: none">Is the voltage greater than 10 volts?</div> <div><div>→ Yes</div><div>GO to F2.</div></div> <div><div>→ No</div><div>REPAIR circuit 29S-LH54 (OG/GN). TEST the system for normal operation.</div></div>		

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

F2: CHECK THE HAZARD LAMP SWITCH ILLUMINATION FOR GROUND



VUE0030291

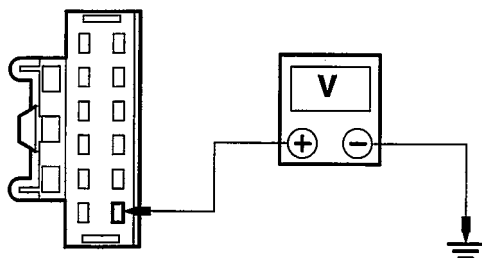
- 1 Measure the resistance between the hazard lamp switch C321 pin 5, circuit 31-LG8 (BK), harness side and ground.
 - Is the resistance less than 5 ohms?
 - Yes
INSTALL a new hazard lamp switch. TEST the system for normal operation.
 - No
REPAIR circuit 31-LG8 (BK). TEST the system for normal operation.

PINPOINT TEST G : THE MULTIFUNCTION SWITCH ASSEMBLY ILLUMINATION IS INOPERATIVE (AIR BAG DEACTIVATION WARNING, STABILITY ASSIST, FRONT WINDOW DEFROST OR REAR WINDOW DEFROST)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

G1: CHECK THE MULTIFUNCTION SWITCH ASSEMBLY ILLUMINATION FOR POWER



VUE0030292

- ☐ Disconnect Multifunction Switch Assembly C714.
- ☐ Turn the headlamp switch to the ON position.
- 3 Measure the voltage between the multifunction switch assembly C714 pin 12, circuit 29S-DK1 (OGNE), harness side and ground.
 - Is the voltage greater than 10 volts?
 - Yes
GO to G2.
 - No
REPAIR circuit 29S-DK1 (OGNE). TEST the system for normal operation.

DIAGNOSIS AND TESTING

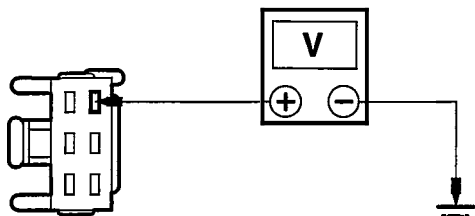
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G2: CHECK THE MULTIFUNCTION SWITCH ASSEMBLY ILLUMINATION FOR GROUND	
<p>VUE0030293</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the multifunction switch assembly C714 pin 9, circuit 31-DK1 (BK), harness side and ground. <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new multifunction switch assembly. TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31-DK1 (BK). TEST the system for normal operation.</p>

PINPOINT TEST H : THE NAVIGATION SYSTEM DISPLAY MODULE ILLUMINATION IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H1: CHECK THE NAVIGATION SYSTEM DISPLAY MODULE ILLUMINATION FOR POWER	
<p>E65740</p>	<ol style="list-style-type: none"> 1 Disconnect Navigation System Display Module C717. 2 Turn the headlamp switch to the ON position. 3 Measure the voltage between the navigation system display module C717 pin 6, circuit 29S-LK34 (OG/BK), harness side and ground. <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes GO to H2.</p> <p>→ No REPAIR circuit 29S-LK34 (OG/BK). TEST the system for normal operation.</p>
H2: CHECK THE NAVIGATION SYSTEM DISPLAY MODULE ILLUMINATION FOR GROUND	
<p>E65739</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the navigation system display module C717 pin 8, circuit 91-MD15 (BWGN), harness side and ground. <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new navigation system display module. TEST the system for normal operation.</p> <p>→ No REPAIR circuit 91-MD15 (BWGN). TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

PINPOINT TEST I : THE SELECTOR LEVER ILLUMINATION IS INOPERATIVE - VEHICLES WITH 4-SPEED AUTOMATIC TRANSAXLE (AW81-40LE)

TEST CONDITIONS**DETAILS/RESULTS/ACTIONS****I1: CHECK THE SELECTOR LEVER ILLUMINATION FOR POWER**

E65881

1 Disconnect Selector Lever C426.

☐ Turn the headlamp switch to the ON position.

3 Measure the voltage between the selector lever C426 pin 4, circuit 29S-LK21 (OGIBK), harness side and ground.

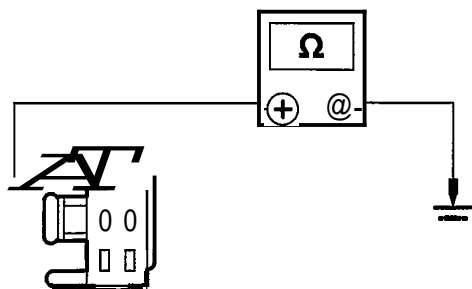
• Is the voltage greater than 10 volts?

→ **Yes**

GO to 12

→ **No**

REPAIR circuit 29S-LK21 (OGIBK). TEST the system for normal operation.

12 CHECK THE SELECTOR LEVER ILLUMINATION FOR GROUND

E65882

1 Measure the resistance between the selector lever C426 pin 1, circuit 31-TA35 (BK), harness side and ground.

• Is the resistance less than 5 ohms?

→ **Yes**

INSTALL a new selector lever.

REFER to: Selector Lever (307-05 Automatic Transmission/Transaxle External Controls - Vehicles With: 4-Speed Automatic Transmission (AW81-40), Removal and Installation).

TEST the system for normal operation.

→ **No**

REPAIR circuit 31-TA35 (BK). TEST the system for normal operation.

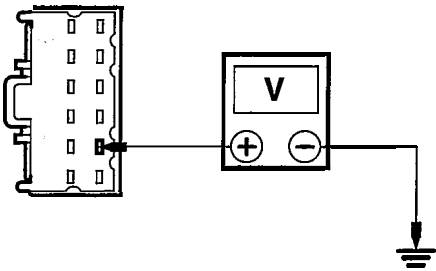
PINPOINT TEST J : THE GEARSHIFT LEVER ILLUMINATION IS INOPERATIVE - VEHICLES WITH AUTOMATED GEARSHIFT

TEST CONDITIONS**DETAILS/RESULTS/ACTIONS****J1: CHECK THE GEARSHIFT LEVER ILLUMINATION FOR POWER**

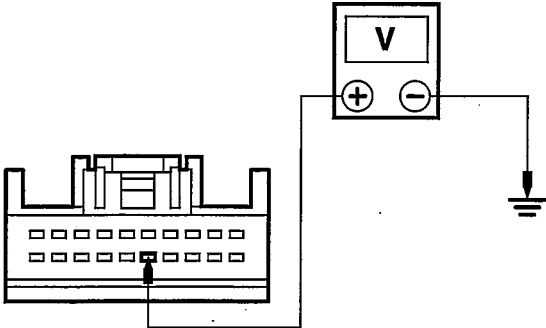
Disconnect Gearshift Lever C679.

☐ Turn the headlamp switch to the ON position.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<div><p>E65879</p></div>	<div><div>3</div>Measure the voltage between the gearshift lever C679 pin 11, circuit 29S-LK21 (OGIBK), harness side and ground.<ul style="list-style-type: none">Is the voltage greater than 10 volts?<div>→ Yes</div>GO to J2.<div>→ No</div>REPAIR circuit 29S-LK21 (OG/BK). TEST the system for normal operation.</div>

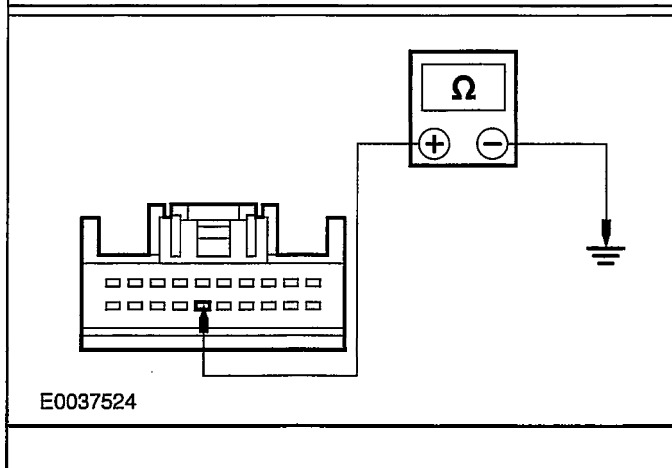
PINPOINT TEST K : THE DVD PLAYER ILLUMINATION IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
K1: CHECK THE DVD PLAYER ILLUMINATION CIRCUIT FOR POWER	
<div><p>E0037523</p></div>	<div>1</div> Disconnect DVD Player C437.
	<div>2</div> Turn the headlamp switch to the ON position.
	<div><div>3</div>Measure the voltage between the DVD player C437 pin 15, circuit 29S-LK17 (OGIBK), harness side and ground.<ul style="list-style-type: none">Is the voltage greater than 10 volts?<div>→ Yes</div>GO to K2.<div>→ No</div>REPAIR circuit 29S-LK17 (OG-BK). Test the system for normal operation.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

K2: CHECK THE DVD PLAYER ILLUMINATION CIRCUIT FOR GROUND

Measure the resistance between the DVD player C437 pin 16, 31-LK17 (BK), harness side and ground.

- Is the resistance less than 1 ohm?

→ **Yes**

INSTALL a new DVD player. Test the system for normal operation.

→ **No**

Repair the circuit(s) 31-LK17 (BK). Test the system for normal operation.

DIAGNOSIS AND TESTING**Instrument Cluster and Panel Illumination — Vehicles Built From:
10/2005**

Refer to Wiring Diagrams Section 413-00, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Electrical
- Fuse(s)
- Wiring harness
- Electrical connector(s)
- Light emitting diode(s) LED(s)
- Bulb(s)

Electrical
- Switch(es)
- Instrument cluster
- Audio unit
- Navigation system display
- Climate control assembly
- Digital versatile disc (DVD) player
- Selector lever
- Gearshift lever

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
• The control illumination is inoperative	• Fuse. • Headlamp switch. • Circuit.	• GO to Pinpoint Test A.
• The Instrument cluster illumination is inoperative	• Circuit(s). • Instrument cluster.	• GO to Pinpoint Test B.
• The climate control/integrated control panel illumination is inoperative - vehicles without air conditioning (A/C)	• Fuse(s). • Circuit(s). • Climate control assembly.	• GO to Pinpoint Test C.
• The climate control/integrated control panel illumination is inoperative - vehicles with A/C with manual temperature control	• Fuse(s). • Circuit(s). • Climate control assembly.	• GO to Pinpoint Test D.
• The climate control/integrated control panel illumination is inoperative - vehicles with electronic automatic temperature control (EATC)	• Fuse(s). • Circuit(s). • Climate control assembly.	• GO to Pinpoint Test E.
• The audio unit illumination is inoperative	• Fuse(s). • Circuit(s). • Audio unit.	• GO to Pinpoint Test F.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
• The hazard lamp switch illumination is inoperative	• Fuse(s). • Circuit(s). • Hazard lamp switch.	• GO to Pinpoint Test G.
• The selector lever illumination is inoperative - vehicles with 4-speed automatic transaxle (AW81-40LE)	• Fuse(s). • Circuit(s). • Selector lever	• GO to Pinpoint Test H.
• The gearshift lever illumination is inoperative - vehicles with automated gearshift	• Fuse(s). • Circuit(s). • Gearshift lever.	• GO to Pinpoint Test I.
• The heated windshield switch and heated rear window switch assembly illumination is inoperative	• Fuse(s). • Circuit(s). • Heated windshield switch and heated rear window switch assembly.	• GO to Pinpoint Test J.
• The stability assist switch and passenger air bag deactivation switch illumination is inoperative	• Fuse(s). • Circuit(s). • Stability assist switch and passenger air bag deactivation switch	• GO to Pinpoint Test K.
• The DVD player illumination is inoperative	• Fuse(s). • Circuit(s). • DVD player.	• GO to Pinpoint Test L.

Pinpoint Tests

NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST L : THE CONTROL ILLUMINATION IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK THE OPERATION OF THE PARKING LAMPS	
	<input type="checkbox"/> Place the side lamps in the ON position. <ul style="list-style-type: none"> • Does the parking lamps and license plate lamps illuminate? <p>→ Yes INSTALL a new headlamp switch. TEST the system for normal operation.</p> <p>→ No Diagnose the exterior lighting system. REFER to: Parking, Rear and License Plate Lamps (417-01 Exterior Lighting, Diagnosis and Testing). TEST the system for normal operation.</p>

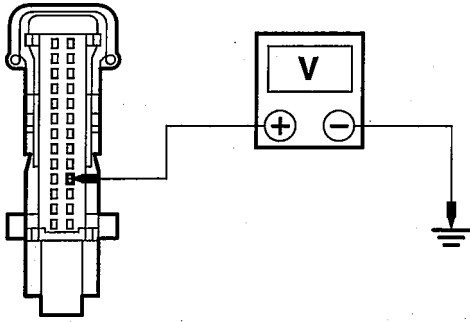
DIAGNOSIS AND TESTING

PINPOINT TEST M : THE INSTRUMENT CLUSTER ILLUMINATION IS INOPERATIVE

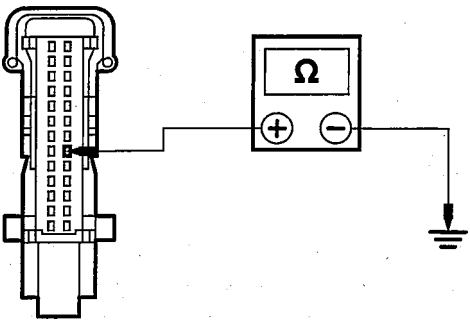
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B1: CHECK THE INSTRUMENT CLUSTER FOR POWER

	<ol style="list-style-type: none">1 Disconnect Instrument Cluster C339.
	<ol style="list-style-type: none">2 Turn the headlamp switch to the ON position.
 <p>E65911</p>	<ol style="list-style-type: none">3 Measure the voltage between the instrument cluster C339 pin 17, circuit 29S-LK19 (OGIBU), harness side and ground. <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <ul style="list-style-type: none"> → Yes GO to B2. → No REPAIR circuit 29S-LK19 (OGIBU). TEST the system for normal operation.

B2: CHECK THE INSTRUMENT CLUSTER FOR GROUND

 <p>E65912</p>	<ol style="list-style-type: none">Measure the resistance between instrument the instrument cluster C339 pin 19, circuit 91-GG11 (BWBU), harness side and ground. <ul style="list-style-type: none"> • Is the resistance less than 5 ohms <ul style="list-style-type: none"> → Yes INSTALL a new instrument cluster. REFER to: Instrument Cluster - Vehicles Built From: 1012005 (413-01 Instrument Cluster, Removal and Installation). TEST the system for normal operation. → No REPAIR circuit 91-GG11 (BWBU). TEST the system for normal operation.
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PINPOINT TEST N : THE CLIMATE **CONTROL/INTEGRATED** CONTROL PANEL ILLUMINATION IS INOPERATIVE • VEHICLES WITHOUT AIR CONDITIONING (A/C)

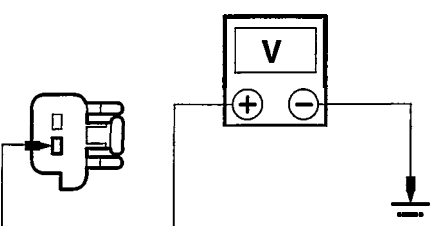
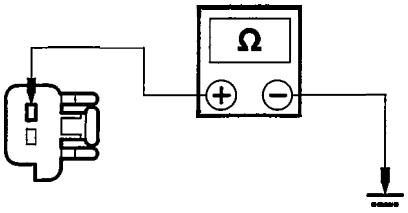
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

C1: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR POWER

	<ol style="list-style-type: none">1 Disconnect Climate Control Assembly Illumination C620.
	<ol style="list-style-type: none">Turn the headlamp switch to the ON position.

DIAGNOSIS AND TESTING

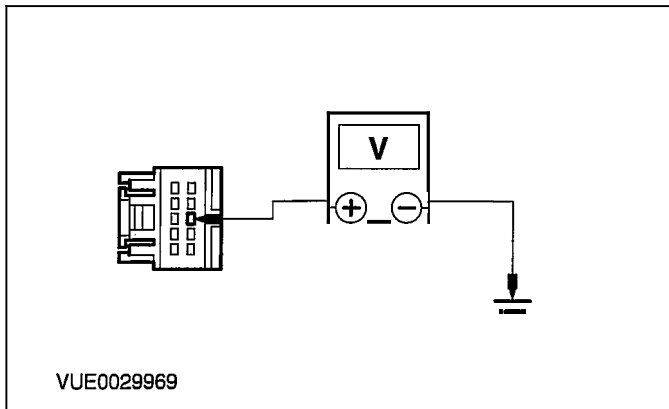
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VUE0029971</p>	<p>Measure the voltage between the climate control assembly illumination C620 pin 1, circuit 29S-LH27 (OGIGN), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to C2.</p> <p>→ No REPAIR circuit 29S-LH27 (OGIGN). TEST the system for normal operation.</p>
C2: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR GROUND	
 <p>VUE0029970</p>	<p>Measure the resistance between climate control assembly illumination C620 pin 2, circuit 31-LH27 (BK), harness side and ground.</p> <ul style="list-style-type: none"> is the resistance less than 5 ohms? <p>→ Yes INSTALL a new climate control assembly. REFER to: Climate Control Assembly - Vehicles Built From: 1012005 (412-04 Control Components, Removal and Installation). TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31-LH27 (BK). TEST the system for normal operation.</p>

PINPOINT TEST O : THE CLIMATE CONTROL/INTEGRATED CONTROL PANEL ILLUMINATION IS INOPERATIVE - VEHICLES WITH A/C WITH MANUAL TEMPERATURE CONTROL

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D1: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR POWER	
	<ol style="list-style-type: none"> 1 Disconnect Climate Control Assembly C302. 2 Turn the headlamp switch to the ON position.

DIAGNOSIS AND TESTING

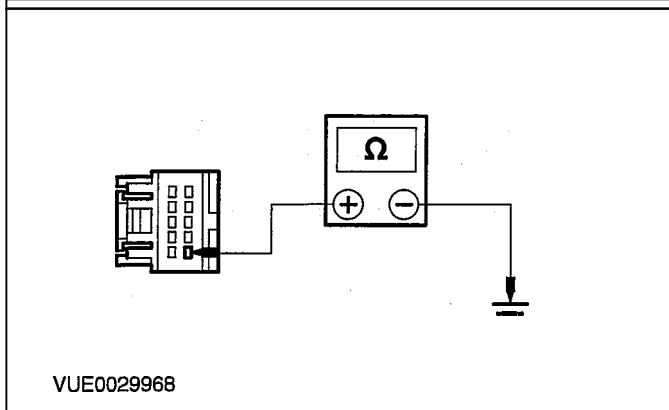
TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 3 Measure the voltage between the climate control assembly C302 pin 8, circuit 29S-LH27 (OGIGN), harness side and ground.
- Is the voltage greater than 10 volts?
- **Yes**
GO to D2.
- **No**
REPAIR circuit 29S-LH27 (OGIGN). TEST the system for normal operation.

D2: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR GROUND



- 1 Measure the resistance between climate control assembly C302 pin 10, circuit 31-LH27 (BK), harness side and ground.
- Is the resistance less than 5 ohms?
- **Yes**
INSTALL a new climate control assembly.
REFER to: Climate Control Assembly - Vehicles Built From: 1012005 (412-04 Control Components, Removal and Installation).
TEST the system for normal operation.
- **No**
REPAIR circuit 31-LH27 (BK). TEST the system for normal operation.

PINPOINT TEST P : THE CLIMATE CONTROL/INTEGRATED CONTROL PANEL ILLUMINATION IS INOPERATIVE - VEHICLES WITH ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC)

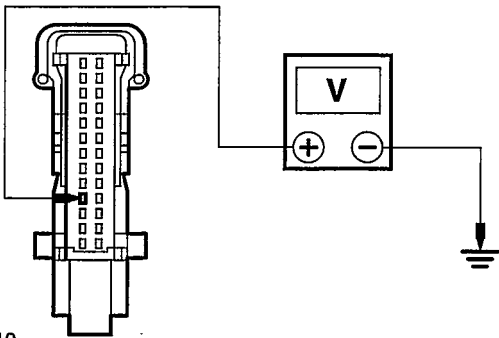
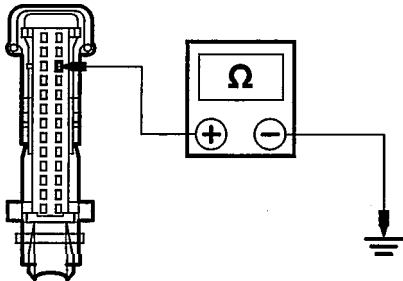
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

EI: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR POWER

- | | |
|--|--|
| | 1 Disconnect Climate Control Assembly C367. |
| | 2 Turn the headlamp switch to the ON position. |

DIAGNOSIS AND TESTING

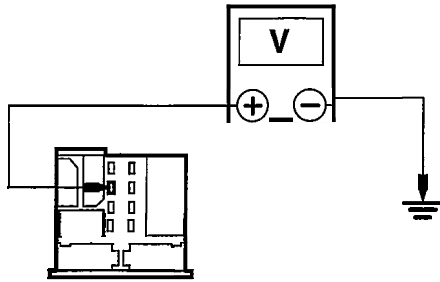
TEST CONDITIONS		DETAILS/RESULTS/ACTIONS
 E65919		<div>3</div> Measure the voltage between the climate control assembly C367 pin 3, circuit 29S-LH27 (OGIGN), harness side and ground. <ul style="list-style-type: none">Is the voltage greater than 10 volts?<ul style="list-style-type: none">→ Yes GO to E2.→ No REPAIR circuit 29S-LH27 (OGIGN). TEST the system for normal operation.
E2: CHECK THE CLIMATE CONTROL ASSEMBLY ILLUMINATION FOR GROUND		
 E44991		<div><input type="checkbox"/></div> Disconnect Climate Control Assembly C366. <p>Measure the resistance between climate control assembly C366 pin 24, circuit 31-FA43 (BK), harness side and ground.</p> <ul style="list-style-type: none">Is the resistance less than 5 ohms?<ul style="list-style-type: none">→ Yes INSTALL a new climate control assembly. REFER to: Climate Control Assembly - Vehicles Built From: 1012005 (412-04 Control Components, Removal and Installation). TEST the system for normal operation.→ No REPAIR circuit 31-FA43 (BK). TEST the system for normal operation.

PINPOINT TEST Q : THE AUDIO UNIT ILLUMINATION IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
F1: CHECK THE AUDIO UNIT ILLUMINATION FOR POWER	
	<div><input type="checkbox"/></div> Disconnect Audio Unit C775.
	<div>2</div> Turn the headlamp switch to the ON position.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E65913

DETAILS/RESULTS/ACTIONS

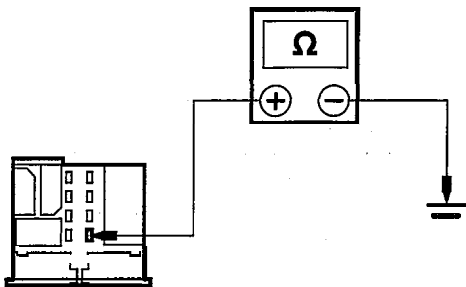
☐ Measure the voltage between the audio unit C775 pin 14, circuit 29S-LK34 (OGIBK), harness side and ground.

• Is the voltage greater than 10 volts?

→ **Yes**
GO to F2.

→ **No**
REPAIR circuit 29S-LK34 (OG/BK). TEST the system for normal operation.

'2: CHECK THE AUDIO UNIT ILLUMINATION FOR GROUND



E65914

☐ Measure the resistance between the audio unit C775 pin 12, circuit 91-MD15 (BWGN), harness side and ground.

• Is the resistance less than 5 ohms?

→ **Yes**
INSTALL a new audio unit.

REFER to: Audio Unit - Vehicles Built From:
10/2005 (415-01 Audio Unit, Removal and Installation).

TEST the system for normal operation.

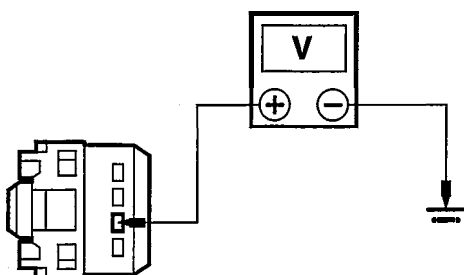
→ **No**
REPAIR circuit 31-LK34 (BK). TEST the system for normal operation.

PINPOINT TEST R : THE HAZARD LAMP SWITCH ILLUMINATION IS INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

G1: CHECK THE HAZARD LAMP SWITCH ILLUMINATION FOR POWER



E65916

1 Disconnect Hazard Lamp Switch C341.

2 Turn the headlamp switch to the ON position.

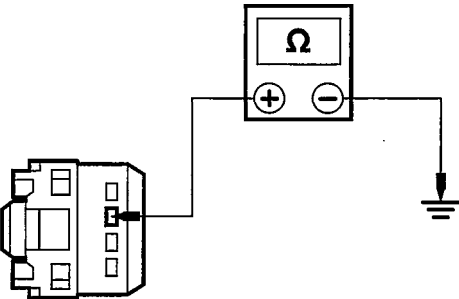
☐ Measure the voltage between the hazard lamp switch C341 pin 3, circuit 29S-LH54 (OGIGN), harness side and ground.

• Is the voltage greater than 10 volts?

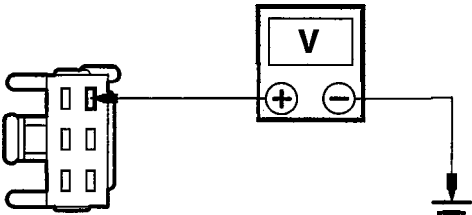
→ **Yes**
GO to G2.

→ **No**
REPAIR circuit 29S-LH54 (OG/GN). TEST the system for normal operation.

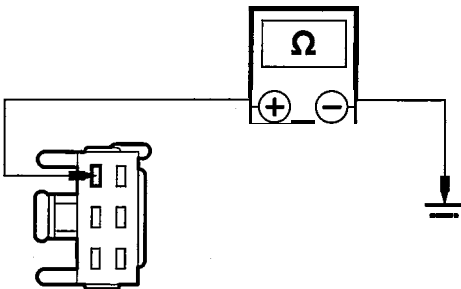
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G2: CHECK THE HAZARD LAMP SWITCH ILLUMINATION FOR GROUND	
 E65917	<p>Measure the resistance between the hazard lamp switch C341 pin 2, circuit 31-LG8 (BK), harness side and ground.</p> <ul style="list-style-type: none">Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new hazard lamp switch. TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31-LG8 (BK). TEST the system for normal operation.</p>

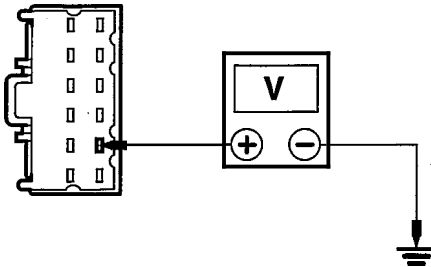
PINPOINT TEST S : THE SELECTOR LEVER ILLUMINATION IS INOPERATIVE - VEHICLES WITH 4-SPEED AUTOMATIC TRANSAXLE (AW81-40LE)

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H1: CHECK THE SELECTOR LEVER ILLUMINATION FOR POWER	
 E65881	Disconnect Selector Lever C426.
	Turn the headlamp switch to the ON position.
	<div><input type="checkbox"/> Measure the voltage between the selector lever C426 pin 4, circuit 29S-LK21 (OGIBK), harness side and ground.</div> <ul style="list-style-type: none">Is the voltage greater than 10 volts? <p>→ Yes GO to H2.</p> <p>→ No REPAIR circuit 29S-LK21 (OGIBK). TEST the system for normal operation.</p>

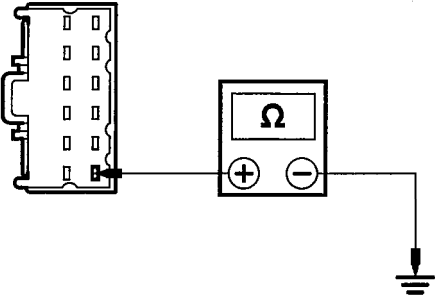
DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS		RESULTS	ACTIONS
H2: CHECK THE SELECTOR LEVER ILLUMINATION FOR GROUND					
		<div>1 Measure the resistance between the selector lever C426 pin 1, circuit 31-TA35 (BK), harness side and ground.</div> <ul style="list-style-type: none">Is the resistance less than 5 ohms? <div>→ Yes INSTALL a new selector lever.</div> <div>REFER to: Selector Lever (307-05 Automatic Transmission/Transaxle External Controls - Vehicles With: 4-Speed Automatic Transmission (AW81-40), Removal and Installation).</div> <div>TEST the system for normal operation.</div> <div>→ No REPAIR circuit 31-TA35 (BK). TEST the system for normal operation.</div>			
E65882					

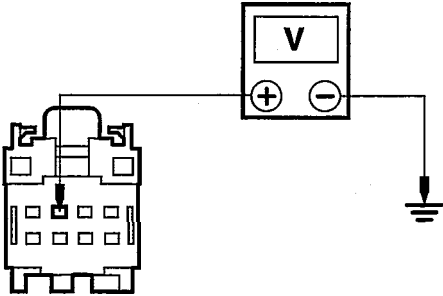
PINPOINT TEST T : THE GEARSHIFT LEVER ILLUMINATION IS INOPERATIVE - VEHICLES WITH AUTOMATED GEARSHIFT

TEST CONDITIONS		DETAILSRESULTSIACTIONS	
I1: CHECK THE GEARSHIFT LEVER ILLUMINATION FOR POWER			
		<div>1 Disconnect Gearshift Lever C679.</div>	
		<div>2 Turn the headlamp switch to the ON position.</div>	
		<div>3 Measure the voltage between the gearshift lever C679 pin 11, circuit 29S-LK21 (OGIBK), harness side and ground.</div> <ul style="list-style-type: none">Is the voltage greater than 10 volts? <div>→ Yes GO to 12</div> <div>→ No REPAIR circuit 29S-LK21 (OG/BK). TEST the system for normal operation.</div>	
E65879			

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
I2: CHECK THE GEARSHIFT LEVER ILLUMINATION FOR GROUND	
 E65880	<div>1 Measure the resistance between the gearshift lever C679 pin 12, circuit 91-TA35 (BWGN), harness side and ground.</div> <ul style="list-style-type: none">Is the resistance less than 5 ohms? <div>→ Yes INSTALL a new gearshift lever. REFER to: Gearshift Lever (308-06 Manual Transmission/Transaxle External Controls, Removal and Installation). TEST the system for normal operation.</div> <div>→ No REPAIR circuit 91-TA35 (BWGN). TEST the system for normal operation.</div>

PINPOINT TEST U : THE HEATED WINDSHIELD SWITCH AND HEATED REAR WINDOW SWITCH ASSEMBLY ILLUMINATION IS INOPERATIVE

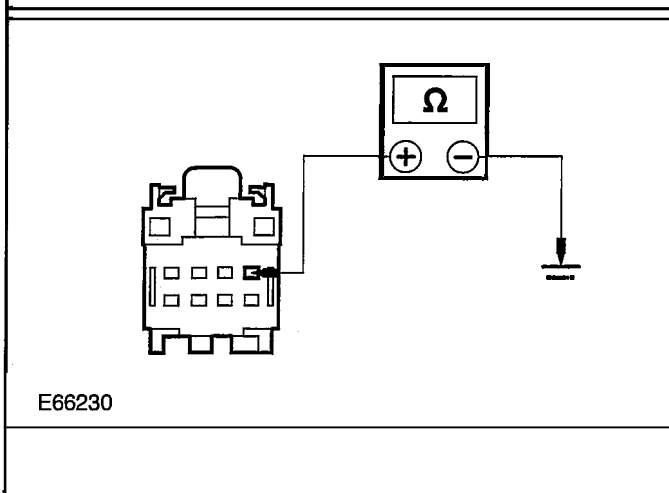
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J1: CHECK THE HEATED WINDSHIELD SWITCH AND HEATED REAR WINDOW SWITCH ASSEMBLY ILLUMINATION FOR POWER	
	<div>Disconnect Heated Windshield Switch and Heated Rear Window Switch Assembly C345.</div> <div>Turn the headlamp switch to the ON position.</div>
 E66229	<div>Measure the voltage between the heated windshield switch and heated rear window switch assembly C345 pin 2, circuit 29S-HB1 (OGIBU), harness side and ground.</div> <ul style="list-style-type: none">Is the voltage greater than 10 volts? <div>→ Yes GO to J2.</div> <div>→ No REPAIR the circuit 29S-HB1 (OG/BU). TEST the system for normal operation.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

J2: CHECK THE HEATED WINDSHIELD SWITCH AND HEATED REAR WINDOW SWITCH ASSEMBLY ILLUMINATION FOR GROUND



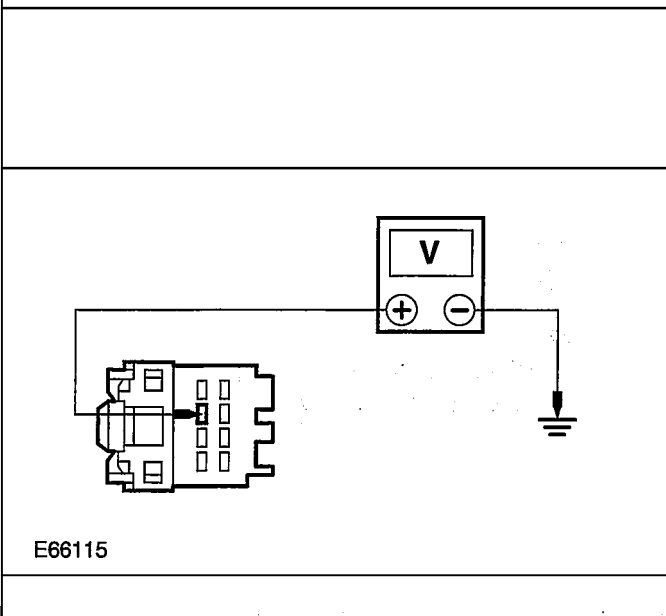
- 1 Measure the resistance between the heated windshield switch and heated rear window switch assembly C345 pin 4, circuit 31-HB1 (BK), harness side and ground.
 - Is the resistance less than 5 ohms?
 - Yes
INSTALL a new heated windshield switch and heated rear window switch assembly. TEST the system for normal operation.
 - No
REPAIR circuit 31-HB1 (BK). TEST the system for normal operation.

PINPOINT TEST V : THE STABILITY ASSIST SWITCH AND PASSENGER AIR BAG DEACTIVATION SWITCH ILLUMINATION IS INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

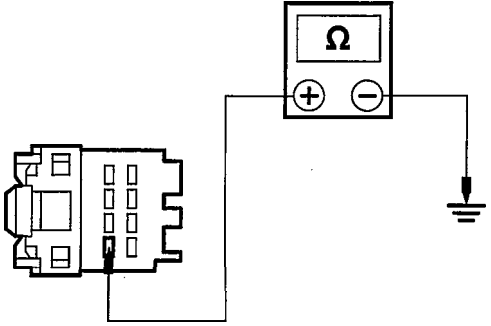
K I: CHECK THE STABILITY ASSIST SWITCH AND PASSENGER AIR BAG DEACTIVATION SWITCH ILLUMINATION FOR POWER



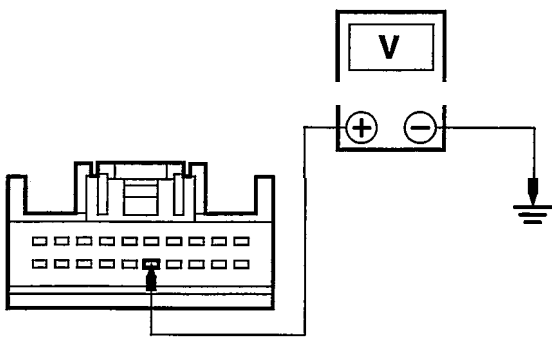
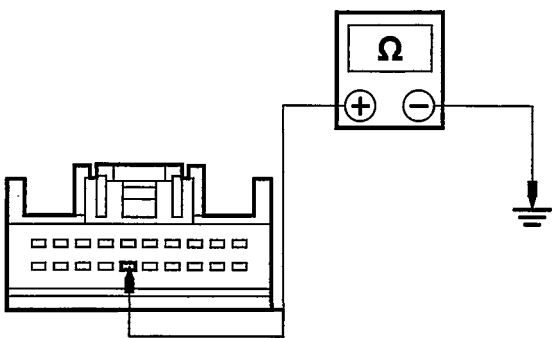
Disconnect Stability Assist Switch and Passenger Air Bag Deactivation Switch C346.

- 2 Turn the headlamp switch to the ON position.
- Measure the voltage between the stability assist switch and passenger air bag deactivation switch C346 pin 2, circuit 29S-CF1 (OGIBU), harness side and ground.
- Is the voltage greater than 10 volts?
 - Yes
GO to K2.
 - No
REPAIR the circuit 29S-CF1 (OGIBU). TEST the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>K2: CHECK THE STABILITY ASSIST SWITCH AND PASSENGER AIR BAG DEACTIVATION SWITCH ILLUMINATION FOR GROUND</p>  <p>E66116</p>	<p>Measure the resistance between the stability assist switch and passenger air bag deactivation switch C346 pin 4, circuit 31-CF1 (BK), harness side and ground.</p> <p>Is the resistance less than 5 ohms?</p> <p>→ Yes INSTALL a new stability assist switch and passenger air bag deactivation switch.</p> <p>→ No REPAIR circuit 31-CF1 (BK). TEST the system for normal operation.</p>

PINPOINT TEST W : THE DVD PLAYER ILLUMINATION IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L1: CHECK THE DVD PLAYER ILLUMINATION CIRCUIT FOR POWER</p>  <p>E0037523</p>	<ol style="list-style-type: none"> 1 Disconnect DVD Player C437. 2 Turn the headlamp switch to the ON position. 3 Measure the voltage between the DVD player C437 pin 15, circuit 29S-LK17 (OG/BK), harness side and ground. <p>• Is the voltage greater than 10 volts?</p> <p>→ Yes GO to L2.</p> <p>→ No REPAIR circuit 29S-LK17 (OG-BK). Test the system for normal operation.</p>
<p>L2: CHECK THE DVD PLAYER ILLUMINATION CIRCUIT FOR GROUND</p>  <p>E0037524</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the DVD player C437 pin 16, 31-LK17 (BK), harness side and ground. <p>• Is the resistance less than 1 ohm?</p> <p>→ Yes INSTALL a new DVD player. Test the system for normal operation.</p> <p>→ No Repair the circuit(s) 31-LK17 (BK). Test the system for normal operation.</p>

SECTION 413-01 Instrument Cluster

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
DIAGNOSIS AND TESTING	
Instrument Cluster — Vehicles Built Up To: 1012005.....	413-01-2
Inspection and Verification.....	413-01-2
Self-Diagnostic Mode.....	413-01-2
Configuration of Instrument Cluster.....	413-01-4
Instrument Cluster — Vehicles Built From: 1012005.....	413-01-5
Inspection and Verification.....	413-01-5
Self-Diagnostic Mode. Vehicles with low series instrument cluster.....	413-01-5
Self-Diagnostic Mode. Vehicles with mid or high series instrument cluster.....	413-01-8
Configuration of the Instrument Cluster.....	413-01-10
REMOVAL AND INSTALLATION	
Instrument Cluster — Vehicles Built Up To: 1012005..... (33 214 0)	413-01-12
Instrument Cluster — Vehicles Built From: 1012005..... (33 214 0)	413-01-13



DIAGNOSIS AND TESTING

Instrument Cluster — Vehicles Built Up To: 1012005

Refer to Wiring Diagrams Section 413-01, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> – Engine oil filter – Engine oil level – Engine coolant temperature (ECT) sensor – Engine coolant level – Thermostat – Collapsed or damaged fuel tank – Door adjustment 	<ul style="list-style-type: none"> – Fuse(s) – Wiring harness – Electrical connector(s) – Instrument cluster – Light emitting diode(s) (LED)(s)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. **NOTE:** If none of the following warning indicators are operating correctly this may indicate a concern with the generic electronic module (GEM). If only one or two of the following warning indicators are not operating correctly this may indicate an instrument cluster concern.

Verify the following warning indicators are working correctly:

- Charging.
 - Turn signals.
 - Headlamps.
5. If the cause is not visually evident, verify the symptom and enter the instrument cluster Self-Diagnostic Mode.

Self-Diagnostic Mode

NOTE: The instrument cluster tripmeter reset button is located on the right-hand side of the instrument cluster lens.

1. To enter the instrument cluster Self-Diagnostic Mode simultaneously press and hold the tripmeter reset button and turn the ignition switch to position II.
2. When TEST is displayed in the LCD, release the tripmeter reset button.
3. To navigate through or skip any of the instrument cluster self-diagnostic mode tests press the tripmeter RESET button. If the reset button is depressed for more than 3 seconds between tests, the instrument cluster will exit the self-diagnostic mode.
4. The self-diagnostic mode is deactivated when the ignition switch is turned to the OFF position.
5. If the self-diagnostic mode cannot be accessed, use WDS to diagnose the instrument cluster.

NOTE: Additional tests are available after the following self-diagnostic mode tests, but are not applicable for this diagnostic.

Self-Diagnostic Mode

Test	Odometer Display	Gauge/Indicator/Display Tested	Description
1. Gauge drive and displays	GAGE	Tachometer, speedometer, temperature and fuel	Both pointers move from the rest position (zero) to below the rest position and then back to the rest position (the pointers will not carry out a full sweep as in previous vehicles). All segments of the engine temperature and fuel level liquid crystal displays (LCD) are illuminated.

DIAGNOSIS AND TESTING

Test	Odometer Display	Gauge/Indicator/Display Tested	Description
2. Fill in all LCD	All segments illuminated	Odometer LCD	Fills in LCD of odometer.
3. Indicator LED(s)	bulb	Indicators and warning indicators	Illuminates all the warning indicators that are controlled by the instrument cluster.
4. ROM level	r XXXX FAIL	Instrument cluster read only memory (ROM)	Displays the instrument cluster ROM level and type.
5. Non-volatile memory level	nrXXXX	Instrument cluster non-volatile memory	Displays the instrument cluster ROM level and type as stored in the non-volatile memory.
6. Not required	EE XX FAIL	Checksum fault	Not required.
7. Not required	CF1 XX	Configuration	Not required.
8. Not required	CF2 XX	Configuration	Not required.
9. Not required	CF3 XX	Configuration	Not required.
10. Diagnostic trouble code (DTC)	dtc then XXXX NONE	DTCs	If any DTCs are displayed. REFER to WDS to diagnose the instrument cluster. A new DTC code will be displayed with each press of the reset button.
11. Vehicle speed m.p.h.	E XXXX	Speedometer	Displays the speed signal input in m.p.h. Dashes in odometer display if no signal received.
12. Vehicle speed km/h	XXXX	Speedometer	Displays the speed signal input in km/h. Dashes in odometer display if no signal received.
13. Not required	SGXXXX	Speedometer driver gauge count	Not required.
14. Engine speed	t XXXX	Tachometer	Displays the tachometer input signal (RPM). Dashes in odometer display if no signal received.
15. Not required	tGXXXX	Tachometer driver gauge count	Not required.
16. Fuel volume	F1 XXX	Fuel sender system	Displays the fuel volume signal input. 000 - 009 Short circuit. 010 - 254 Normal range. 255 open circuit
17. Not required	FP1 XXX	Input	Not required.
18. Not required	FPt XXX	Input	Not required.
19. Fuel level	FGXXXX	Fuel LCD	Displays the number of segments illuminated in the Fuel LCD.

DIAGNOSIS AND TESTING

Test	Odometer Display	Gauge/Indicator/Display Tested	Description
20. Engine coolant temperature	XXX C	Engine coolant temperature	Displays the last engine coolant temperature signal input in 1/10 degree C.
21. Engine temperature	CGXXXX	Temperature LCD	Displays the number of segments illuminated in the temperature LCD.
22. Odometer input	odoXXX	Odometer display	Displays the odometer input received. 0 - 254 valid odometer input. 255 invalid odometer input.
23. Not required	trn -X	Input	Not required.
24. Not required	IUd XX	Input	Not required.
25. Battery voltage	bAtXXX	Battery Voltage	Displays battery voltage input.
26. Brake fluid switch	bf -X	Brake fluid level input	-O Good fluid level. -G Low fluid level.
27. Handbrake switch	hb -X	Handbrake input	-O Handbrake off. -G Handbrake on.
28. Illumination	SLP -X	Parking light input	-b Parking lights on. -O Parking lights off.
29. Not required	LCXXXX	LCD duty cycle	Not required.
30. Crank sense	Cr -X	Crank sense circuit	Displays the crankshaft sensor input to the instrument cluster. -b Input high. -O Input low.

6. REFER to WDS to continue diagnostics.

Configuration of Instrument Cluster

The instrument cluster is a programmable module, which must be configured by selecting the Programmable Module Installation Routine on WDS.

NOTE: When the new instrument cluster has been configured with the odometer value, its configuration cannot be decreased or matched. A new configuration will result in an increase in the value by a minimum of two units.

NOTE: The odometer value must be recorded from the original instrument cluster before removal.

If the odometer value cannot be obtained from the instrument cluster (display failure) the customer should supply the approximate value.

The following features will need to be configured when a new instrument cluster is installed:

- Malfunction Indicator Lamp (MIL)
- Anti-lock Brake System (ABS) warning indicator
- Anti-Lock Control - Stability Assist indicator
- Odometer display
- Automated Gearshift System indicator
- Passive Anti-Theft System (PATS) indicator

DIAGNOSIS AND TESTING

Instrument Cluster — Vehicles Built From: 1012005

General Equipment

Worldwide Diagnostic System (WDS)

Self-Diagnostic Mode. Vehicles with low series instrument cluster

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

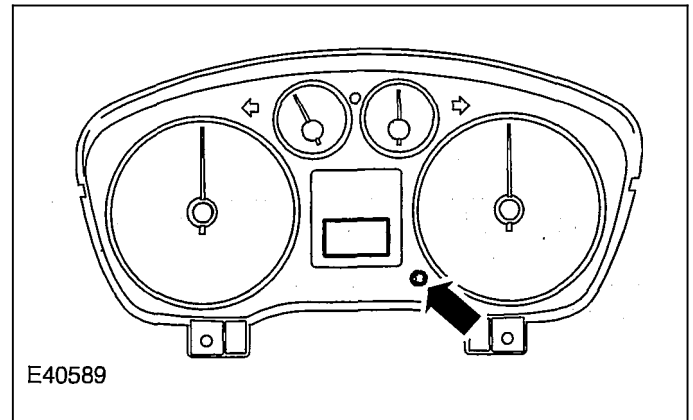
Mechanical	Electrical
<ul style="list-style-type: none"> - Engine oil filter - Engine oil level - Engine coolant temperature (ECT) sensor - Engine coolant level - Thermostat - Collapsed or damaged fuel tank - Door adjustment 	<ul style="list-style-type: none"> - Fuse(s) - Wiring harness - Electrical connector(s) - Instrument cluster - Light emitting diode(s) (LED)(s)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.

4. **NOTE:** If none of the following warning indicators are operating correctly this may indicate a concern with the central junction box (CJB). If only one or two of the following warning indicators are not operating correctly this may indicate an instrument cluster concern.

Verify the following warning indicators are working correctly:

- Charging.
 - Turn signals.
 - Headlamps.
5. If the cause is not visually evident, verify the symptom and enter the instrument cluster Self-Diagnostic Mode.



NOTE: The instrument cluster tripmeter reset button is located on the right-hand side of the instrument cluster lens.

1. To enter the instrument cluster Self-Diagnostic Mode. Simultaneously press and hold the tripmeter RESET button and turn the ignition switch from position 0, to position II.
2. Entry to the Self-Diagnostic Mode is confirmed when 'tEST' is displayed in the odometer tripmeter liquid crystal display (LCD). The tripmeter reset button must be released within three seconds of 'tEST' being displayed or the instrument cluster will exit the Self-Diagnostic mode.
3. To navigate through or skip any of the instrument cluster Self-Diagnostic Mode tests, press the tripmeter RESET button. If the reset button is depressed for more than 3 seconds' between tests, the instrument cluster will exit the Self-Diagnostic Mode.
4. The Self-Diagnostic Mode is deactivated when the ignition switch is turned to the OFF position or low battery voltage is detected.
5. If input data to the instrument cluster is missing or invalid, the tripmeter LCD will display '----'
6. If the Self-Diagnostic Mode cannot be accessed, use WDS to diagnose the instrument cluster.

NOTE: Additional tests are available after the following Self-Diagnostic Mode tests, but are not applicable for this diagnostic.

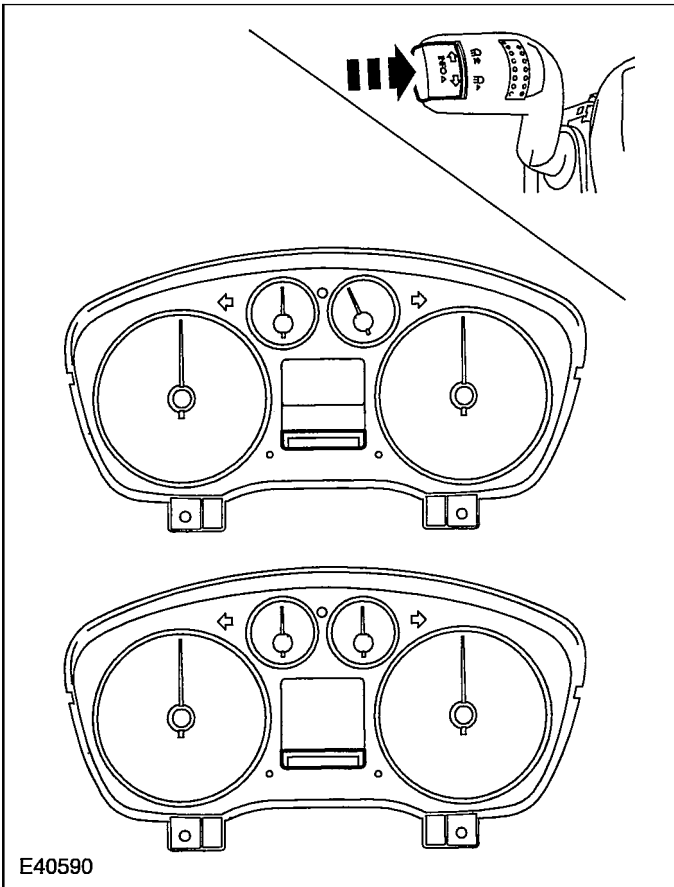
DIAGNOSIS AND TESTING

Test	Odometer Display	Gauge/Indicator/Display Tested	Description
1. Self-Diagnostic entry	tEst	Instrument cluster	Establishes Self-Diagnostic Mode.
2. Gauge sweep	gAgE	Tachometer, speedometer, temperature and fuel	All gauges go through a full up and down pointer sweep smoothness check. The pointers should take 3 seconds to achieve full sweep and 3 seconds to return to the rest position.
3. Odometer LCD	888888	Odometer LCD	Fills in the LCDs of the odometer display.
4. Indicator LED(s)	LeD	Indicators and warning indicators	Illuminates all the LED warning indicators that are controlled by the instrument cluster.
5. ROM level	r XXXX /FAIL	Instrument cluster read only memory (ROM)	Displays the instrument cluster ROM level and type.
6. Not required	ErXXXX	-	Not required.
7. Not required	E XX /FAIL	-	Not required.
8. Manufacturing date	dtXXXX	Instrument cluster manufacturing date	Displays the instrument cluster date of manufacture.
9. Diagnostic trouble code (DTC)	<ul style="list-style-type: none"> • dtc then XXX ▪ nonE 	DTCs	Display the individual DTCs at 1 second intervals. REFER to WDS to diagnose the instrument cluster.
10. Vehicle speed m.p.h.	SPXXXX	Speedometer	Displays the speed signal input in miles per hour.
11. Vehicle speed km/h	SPXXXX	Speedometer	Displays the speed signal input in kilometers per hour.
12. Not required		-	Not required.
13. Engine speed	tAXXXX	Tachometer	Displays the engine speed input signal (RPM)
14. Not required	tgXXXX	-	Not required.
15. Odometer count	od XXX	Odometer	Displays the odometer rolling count
16. Fuel volume	F XXX	Fuel sender system	<ul style="list-style-type: none"> • Displays the fuel volume signal input. • 000 - 009 Short circuit • 010 - 254 Normal range • 255 open circuit
17. Not required	FgXXXX	-	Not required.
18. Not required	FL XX	-	Not required.

DIAGNOSIS AND TESTING

Test	Odometer Display	Gauge/Indicator/Display Tested	Description
19. Fuel level percentage	FP XX	Fuel gauge	<ul style="list-style-type: none"> Displays the fuel average percentage level. Range of display 00 to 64 64 being 100% full FF will be displayed for invalid data
20. Engine coolant temperature (ETC)	XXX C	ECT	<ul style="list-style-type: none"> Displays the engine coolant temperature as a decimal. Range 0 to 254 255 would indicate invalid data
21. Not required	XXX Cg	-	Not required.
22. Battery voltage	btXXX	Battery voltage	Displays battery voltage input.
23. to 28. Not required	A0-XX to A5-XX	-	Not required.
29. to 42. Not required	PA-HH to Pn-HH	-	Not required.
43. to 46. Not required	P1 XX to P4 XX	-	Not required.
47. Distance to empty	dtEXXX	Trip computer	Displays the distance to fuel tank empty.
48. Fuel economy	rAFEXX	Trip computer	Displays the rolling average fuel economy in miles per UK gallon.

DIAGNOSIS AND TESTING

Self-Diagnostic Mode. Vehicles with mid or high series instrument cluster

NOTE: The set button is located on the steering column left hand multifunction switch.

1. To enter the instrument cluster Self-Diagnostic Mode. Simultaneously press and hold the SET button and turn the ignition switch from position 0, to position II.
2. Entry to the Self-Diagnostic Mode is confirmed when 'TEST' is displayed in the odometer tripmeter liquid crystal display (LCD). The tripmeter set button must be released within three seconds of 'TEST' being displayed or the instrument cluster will exit the Self-Diagnostic Mode.
3. To navigate through or skip any of the instrument cluster Self-Diagnostic Mode tests, press the SET button. If the set button is depressed for more than 3 seconds between tests, the instrument cluster will exit the Self-Diagnostic Mode.
4. The Self-Diagnostic Mode is deactivated when the ignition switch is turned to the OFF position or low battery voltage is detected.
5. If input data to the instrument cluster is missing or invalid, the tripmeter LCD will display '----'.
6. If the Self-Diagnostic Mode cannot be accessed, use WDS to diagnose the instrument cluster.

NOTE: Additional tests are available after the following Self-Diagnostic Mode tests, but are not applicable for this diagnostic.

Self-Diagnostic Mode

Test	Odometer Display	Gauge/Indicator/ Display Tested	Description
1. Self-Diagnostic entry	<ul style="list-style-type: none"> • TEST • no display 	Instrument cluster	Establishes Self-Diagnostic Mode.
2. Gauge sweep	<ul style="list-style-type: none"> • GAUGESWEEP • no display 	Tachometer, speedometer, temperature and fuel	All gauges go through a full up and down pointer sweep smoothness check. The pointers should take 3 seconds to achieve full sweep and 3 seconds to return to the rest position.
3. Odometer LCD	Filled in black	odometer LCD O	Fills in the LCD,s of the odometer display.
4. Indicator LED(s)	<ul style="list-style-type: none"> • LED TEST • no display 	Indicators and warning indicators	Illuminates all the LED warning indicators that are controlled by the instrument cluster.

DIAGNOSIS AND TESTING

Test	Odometer Display	Gauge/Indicator/ Display Tested	Description
5. ROM level	<ul style="list-style-type: none"> ROM LEVEL XXXX / FAIL 	Instrument cluster read only memory (ROM)	Displays the instrument cluster ROM level and type.
6. Not required	<ul style="list-style-type: none"> NVM TARGET ROM X X X X 	-	Not required.
7. Not required	<ul style="list-style-type: none"> NVM EEPROM LVL XXXX / FAIL 	-	Not required.
8. Manufacturing date	<ul style="list-style-type: none"> MANUFACTURE HOURS XXXX 	Instrument cluster manufacturing date	Displays the instrument cluster date of manufacture.
9. Diagnostic trouble code (DTC)	<ul style="list-style-type: none"> DTC #NN XXXX. 	DTCs	Display the individual DTCs at 1 second intervals. REFER to WDS to diagnose the instrument cluster.
10. Vehicle speed m.p.h.	<ul style="list-style-type: none"> ROAD SPEED XXX.X MPH 	Speedometer	Displays the speed signal input in miles per hour.
11. Vehicle speed km/h	<ul style="list-style-type: none"> ROAD SPEED XXX.X KM/H 	Speedometer	Displays the speed signal input in kilometers per hour.
12. Not required	<ul style="list-style-type: none"> SPEEDO XXXX 	-	Not required.
13. Engine speed	<ul style="list-style-type: none"> ENGINE SPEED XXXX 	Tachometer	Displays the engine speed input signal (RPM)
14. Not required	<ul style="list-style-type: none"> TACHO GAUGE XXXX 	-	Not required.
15. Odometer count	<ul style="list-style-type: none"> ODO ROLL COUNT XXX 	Odometer	Displays the odometer rolling count
16. Fuel volume	<ul style="list-style-type: none"> FUEL AID INPUT XXX 	Fuel sender system	<ul style="list-style-type: none"> Displays the fuel volume signal input. 000 - 009 Short circuit 010 - 254 Normal range 255 open circuit
17. Not required	<ul style="list-style-type: none"> FUEL GAUGE X X X X 	-	Not required.
18. Not required	<ul style="list-style-type: none"> FUEL FLOW X X X X 	-	Not required.

DIAGNOSIS AND TESTING

Test	Odometer Display	Gauge/Indicator/ Display Tested	Description
19. Fuel level percentage	<ul style="list-style-type: none"> FUEL PERCENT XXXX 	Fuel gauge	<ul style="list-style-type: none"> Displays the fuel average percentage level. Range of display 00 to 64 64 being 100% full FF will be displayed for invalid data
20. Engine coolant temperature (ECT)	<ul style="list-style-type: none"> ENGINE TEMP XXX C 	ECT	<ul style="list-style-type: none"> Displays the engine coolant temperature as a decimal. Range 0 to 254 255 would indicate invalid data
21. Not required	<ul style="list-style-type: none"> TEMP GAUGE XXXX 	-	Not required.
22. Battery voltage	<ul style="list-style-type: none"> BATTERY XX.X 	Battery voltage	Displays battery voltage input.
23. to 28. Not required	<ul style="list-style-type: none"> AID INPUT 00 to A/D INPUT 05 XX 	-	Not required.
29. to 42. Not required	<ul style="list-style-type: none"> PORT A to PORT N XX 	-	Not required.
43. to 46. Not required	<ul style="list-style-type: none"> PERSONALITY 01 to PERSONALITY 04 XX 	-	Not required.
47. Distance to empty	<ul style="list-style-type: none"> DIST. TO EMPTY XXX MILES 	Trip computer	Displays the distance to fuel tank empty.
48. Fuel economy	<ul style="list-style-type: none"> RAFE XXXMPG 	Trip computer	Displays the rolling average fuel economy in miles per UK gallon.

7. The self-diagnostic mode is to act as a guide to establish if the concern is instrument cluster related. Before any other action is taken REFER to WDS to continue diagnostics.

Configuration of the Instrument Cluster

The instrument cluster is a programmable module, which must be configured by selecting the Programmable Module Installation Routine on WDS.

NOTE: When the new instrument cluster has been configured with the odometer value, its configuration cannot be decreased or matched. **A**

DIAGNOSIS AND TESTING

new configuration will result in an increase in the displayed odometer value by a minimum of two units.

NOTE: The odometer value must be recorded from the original instrument cluster before removal.

If the odometer value cannot be obtained from the original instrument cluster (display failure) the customer should supply the approximate value.

The following features will need to be configured when a new instrument cluster is installed:

- Anti-lock Brake System (ABS)
- Trip computer
- Parking aid
- Belt minder
- Safety belt not fastened
- Right-hand drive
- Overspeed warning
- Reverse warning
- Turbocharger boost pressure
- Washer fluid sensor
- Navigation
- Fuel cap release
- Engine type
- Display language

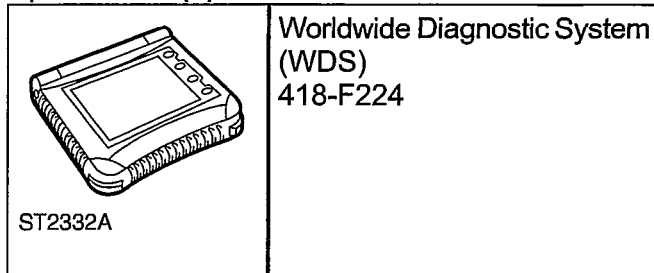
In addition the new instrument cluster will require the original odometer value to be entered.

After the installation and configuration of a new instrument cluster. The passive anti-theft system (PATS) will require programming by selecting the Security Access routine on WDS.

REMOVAL AND INSTALLATION

Instrument Cluster — Vehicles Built Up To: 10/2005(33 214 0)

Special Tool(s)

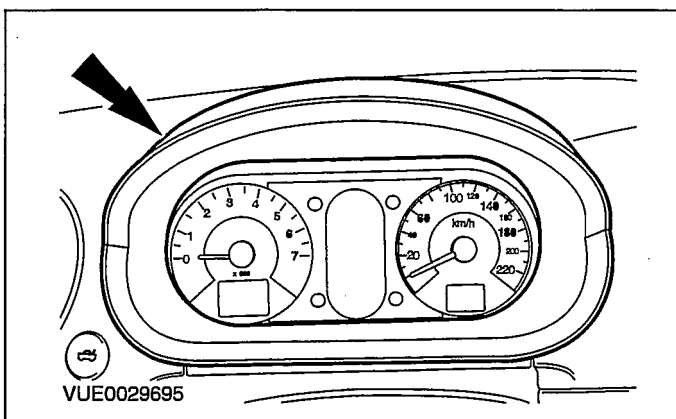


Removal

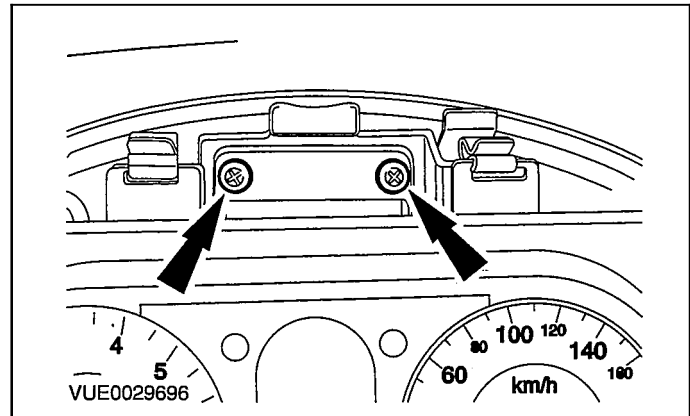
1. **NOTE:** If a new instrument cluster is to be installed, connect WDS and upload the instrument cluster configuration information **using the programmable modules installation** routine, prior to commencing the removal of the instrument cluster.

NOTE: If a new instrument cluster is to be installed, the odometer value must be recorded from the original instrument cluster before removal as this will be required when configuring the new instrument cluster. If the odometer value cannot be obtained from the instrument cluster (display failure). The customer should supply the approximate value.

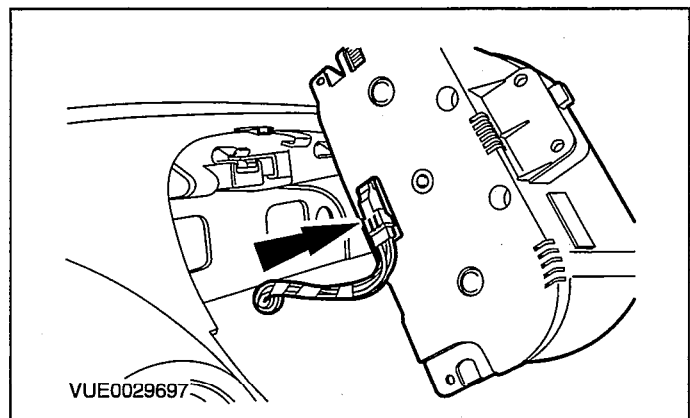
Remove the instrument cluster finish panel. (Steering wheel shown removed for clarity).



2. Detach the instrument cluster from the instrument panel.



3. **Disconnect the electrical connector and** remove the instrument cluster.



Installation

- **NOTE:** If a new instrument cluster is being installed, connect WDS and configure the new instrument cluster to the PATS system after the installation of the instrument cluster.

NOTE: If a new instrument cluster is being installed connect WDS and download the instrument cluster configuration information using the programmable modules installation routine after the installation of the instrument cluster.

To install, reverse the removal procedure.

REMOVAL AND INSTALLATION

Instrument Cluster — Vehicles Built From: 10/2005(33 214 0)

General Equipment

Worldwide Diagnostic System (WDS)

Thin-bladed screwdriver

Round-ended steel rule

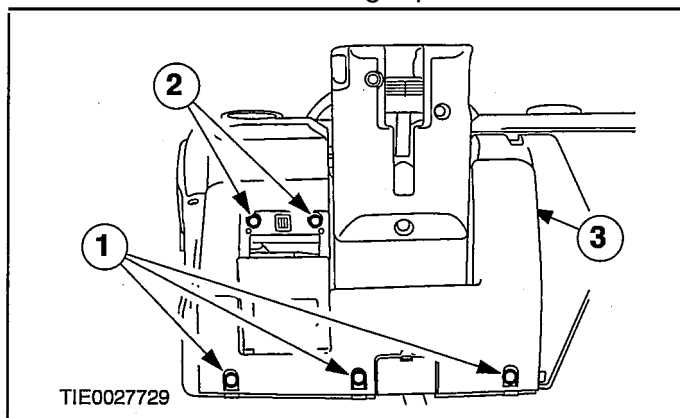
Removal

NOTE: If a new instrument cluster is to be installed, connect WDS and upload the instrument cluster configuration information using the programmable modules installation routine, prior to commencing the removal of the instrument cluster.

NOTE: If a new instrument cluster is to be installed, the odometer value must be recorded from the original instrument cluster before removal as this will be required when configuring the new instrument cluster. If the odometer value cannot be obtained from the instrument cluster (display failure), the customer should supply the approximate value.

1. Remove the instrument panel lower panel.

1. Remove the lower retaining screws.
2. Remove the upper retaining screws from the stowage compartment.
3. Release the retaining clip.



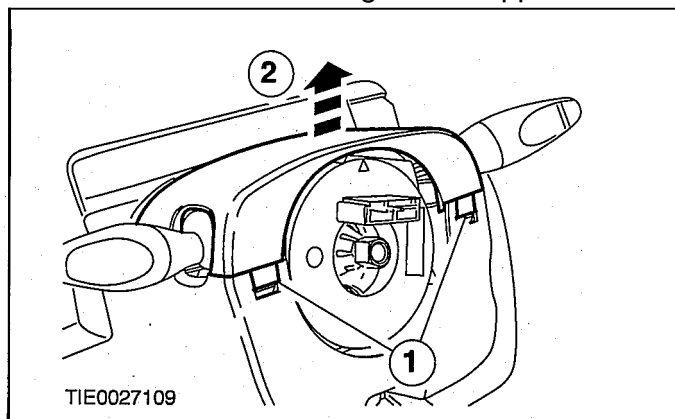
2. Using the locking lever, lower the steering column.

3. **NOTE:** Turn the steering wheel to access the steering column upper shroud retaining clips.

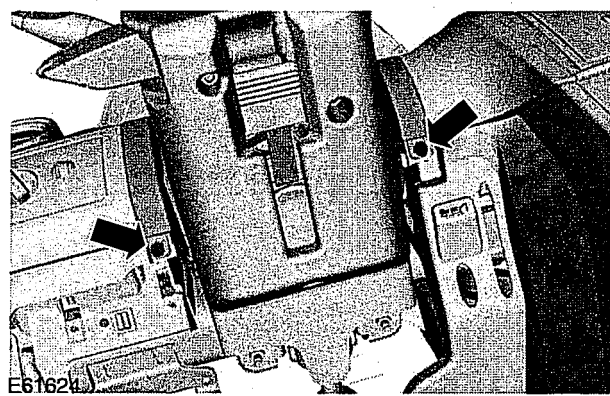
Remove the steering column upper shroud (steering wheel shown **removed** for clarity).

1. Using a thin-bladed screwdriver, release the two retaining clips.

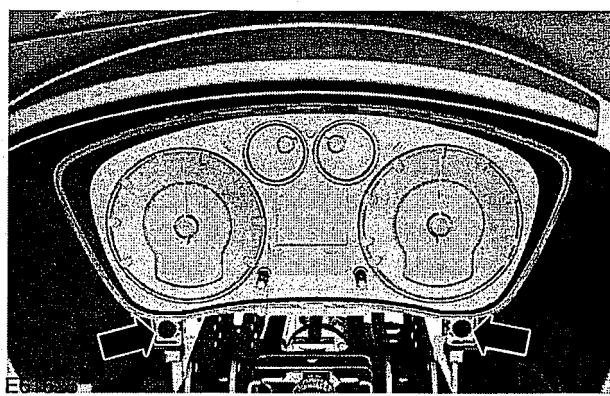
2. Remove the steering column upper shroud.



4. Remove the instrument cluster finish panel.

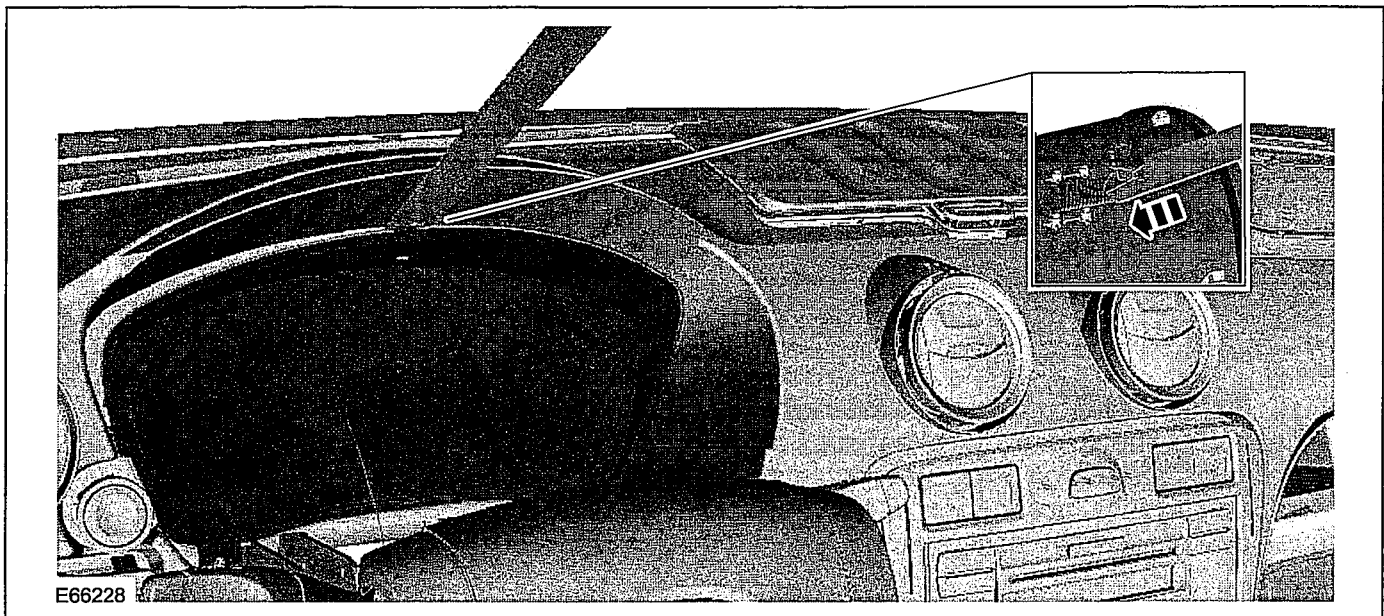


5. Remove the instrument cluster retaining screws (steering wheel shown removed for clarity).

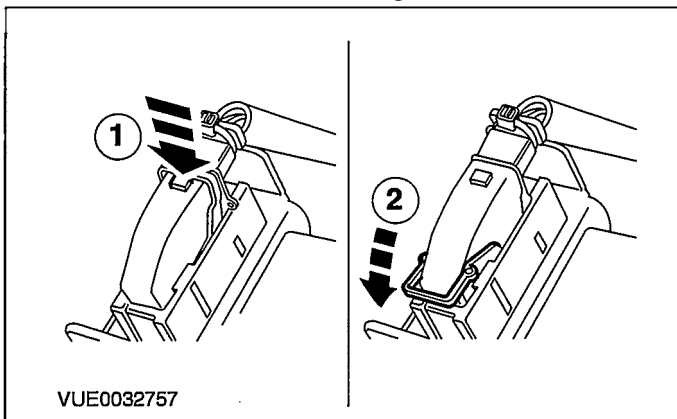


6. Using a suitable round-ended steel rule, detach the instrument cluster from the instrument panel (steering wheel shown removed for clarity).

REMOVAL AND INSTALLATION

**7. Disconnect the electrical connector and remove the instrument cluster.**

1. Press the locking tang.
2. Detach the self-locating electrical connector.

**Installation**

1. **NOTE:** If a new instrument cluster is being installed, connect WDS and configure the new instrument cluster to the PATS system after the installation of the instrument cluster.

NOTE: If a new instrument cluster is being installed connect WDS and download the instrument cluster configuration information using the programmable modules installation routine after the installation of the instrument cluster.

To install, reverse the removal procedure.

SECTION 413-06 Horn

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SPECIFICATIONS	
Specifications.....	413-06-2
DIAGNOSIS AND TESTING	
Horn — Vehicles Built Up To: I012005.....	413-06-3
Inspection and Verification.....	413-06-3
Symptom Chart.....	413-06-3
Pinpoint Tests.....	413-06-3
Horn — Vehicles Built From: 1012005.....	413-06-13
Inspection and Verification.....	413-06-13
Symptom Chart.....	413-06-13
Pinpoint Tests.....	413-06-13

SPECIFICATIONS**Toraue Specifications**

Description	Nm	lb-ft	lb-in
Horn retaining nut	26	19	-

DIAGNOSIS AND TESTING**Horn — Vehicles Built Up To: 1012005**

Refer to Wiring Diagrams Section 413-06, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection Chart

Electrical
- Fuse(s)
- Wiring harness

Electrical
- Electrical connector(s)
- Horn switch
- Horn
- Clockspring
- Generic Electronic Module (GEM)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
• The horn is inoperative	<ul style="list-style-type: none"> • Fuse(s). • Circuit(s). • Horn switch. • Horn. • Clockspring. • GEM. 	• GO to Pinpoint Test A.
• The horn is always on	<ul style="list-style-type: none"> • Clockspring. • Horn switch. • Circuit(s). • GEM. 	• GO to Pinpoint Test B.

Pinpoint Tests

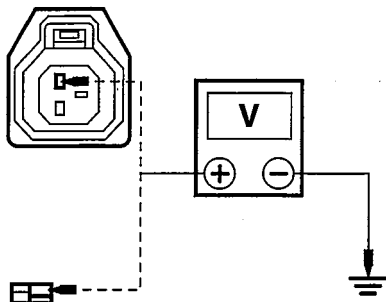
NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST A : THE HORN IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
AI: CHECK THE HORN FOR POWER	
	<ol style="list-style-type: none"> 1 Disconnect Horn C413 - All Except Vehicles with 2.0L Duratec-HE (M14) engine or 1.6L Duratorq-TDCi (DV) Diesel engine. 2 Disconnect Horn C414 - Vehicles with 2.0L Duratec-HE (M14) engine or 1.6L Duratorq-TDCi (DV) Diesel engine.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E65097

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between the horn C413 pin 1 or C414 pin 1, circuit 29S-GJ6 (OGNE), harness side and ground while pressing the horn switch.

- Is the voltage greater than 10 volts?

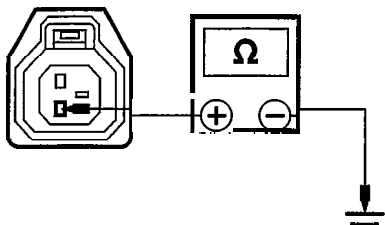
→ **Yes**

All Except Vehicles with 2.0L Duratec-HE (MI4) engine or 1.6L Duratorq-TDCi (DV) Diesel engine, INSTALL a new horn. TEST the system for normal operation.
Vehicles with 2.0L Duratec-HE (MI4) engine or 1.6L Duratorq-TDCi (DV) Diesel engine, GO to A2.

→ **No**

GO to A3.

A2: CHECK THE HORN GROUND CIRCUIT 31-GJ6 (BK)



E65236

- 1** Measure the resistance between the horn C414 pin 2, circuit 31-GJ6 (BK), harness side and ground.

- Is the resistance less than 5 ohms?

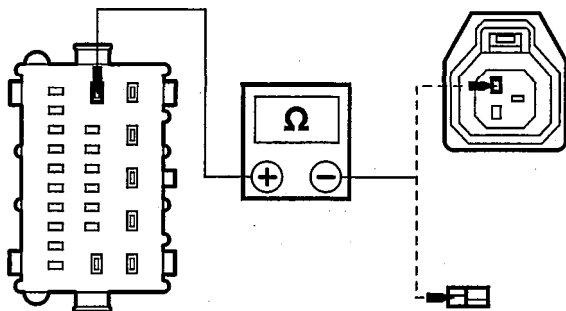
→ **Yes**

INSTALL a new horn. TEST the system for normal operation.

→ **No**

REPAIR the circuit. TEST the system for normal operation.

A3: CHECK CIRCUIT 29S-GJ6 (OGNE) FOR OPEN CIRCUIT



E65305

- 1** Disconnect GEM C319.

- ☐ Measure the resistance between the GEM C319 pin 7, circuit 29S-GJ6 (OGNE), harness side and the horn C413 pin 1 or C414 pin 1, circuit 29S-GJ6 (OGNE), harness side.

- Is the resistance less than 5 ohms?

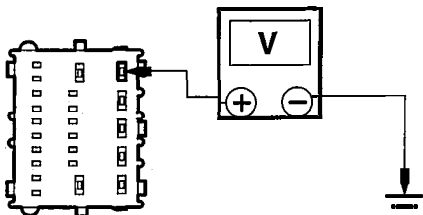
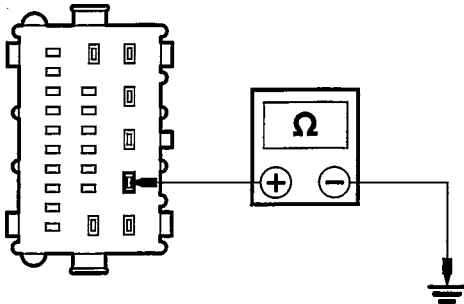
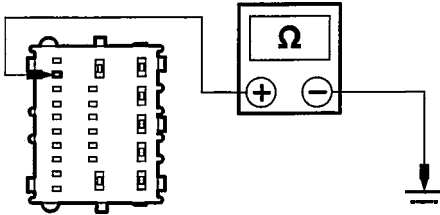
→ **Yes**

GO to A4.

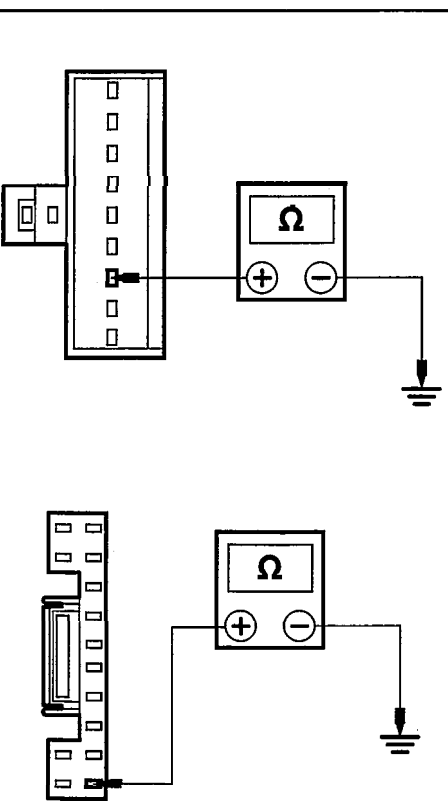
→ **No**

REPAIR the circuit. TEST the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>A4: CHECK THE GEM FOR POWER</p>  <p>VUE0030288</p>	<p>1 Measure the voltage between the GEM C319 pin 5, circuit 29-GJ8 (OG), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to A5.</p> <p>→ No REPAIR circuit 29-GJ8 (OG). TEST the system for normal operation.</p>
<p>A5: CHECK THE GEM GROUND CIRCUIT 31-DK20 (BK)</p>  <p>E65306</p>	<p>1 Disconnect GEM C316.</p> <p>2 Measure the resistance between the GEM C316 pin 2, circuit 31-DK20 (BK), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes GO to A6.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>A6: CHECK THE HORN SWITCH CIRCUIT FOR OPEN CIRCUIT</p>  <p>VUE0030287</p>	<p>1 Disconnect GEM C320.</p> <p>2 Measure the resistance between the GEM C320 pin 22, circuit 31S-GJ7 (BWBU), harness side and ground while pressing the horn switch.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new GEM. REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation.</p> <p>→ No GO to A7.</p>

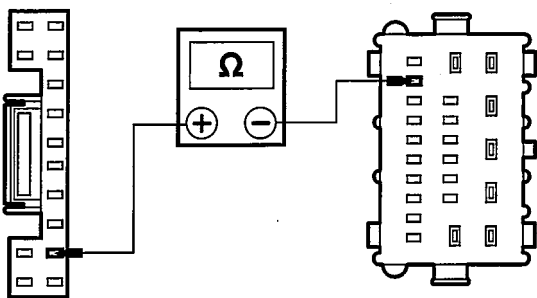
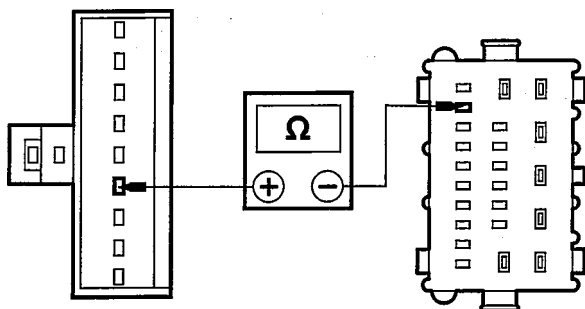
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A7: CHECK THE HORN SWITCH GROUND CIRCUIT	
 E65112	<div>1 Disconnect Clockspring C763 - Vehicles Without Stability Assist.</div> <div>2 Disconnect Clockspring C353 - Vehicles With Stability Assist.</div> <div><input type="checkbox"/> Measure the resistance between the clockspring C763 pin 7, circuit 31-GJ9 (BK) (vehicles without stability assist) or C353 pin 14, circuit 31-GJ9 (BK) (vehicles with stability assist), harness side and ground.</div> <div><ul style="list-style-type: none">• Is the resistance less than 5 ohms?<ul style="list-style-type: none">→ Yes GO to A8.→ No REPAIR circuit 31-GJ9 (BK). TEST the system for normal operation.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

A8: CHECK CIRCUIT **31S-GJ7** (BWBU) FOR OPEN CIRCUIT

E65307

- 1 Measure the resistance between the clockspring C763 pin 6, circuit 31S-GJ7 (BWBU) (vehicles without stability assist) or C353 pin 13, circuit 31S-GJ7 (BWBU) (vehicles with stability assist), harness side and the GEM C320 pin 22, circuit 31S-GJ7 (BWBU), harness side.

- Is the resistance less than 5 ohms?

→ Yes
GO to A9.

→ No
REPAIR the circuit. TEST the system for normal operation.

A9: CHECK THE **CLOCKSPRING** CIRCUIT FOR OPEN CIRCUIT

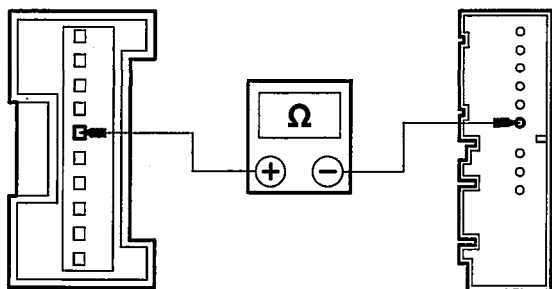
▲ WARNING: To deactivate the driver air bag, refer to the procedure in section 501-20B for the correct air bag deactivation procedure. Failure to follow this instruction, may result in personal injury.

- 1 Remove the driver air bag module.

REFER to: Driver Air Bag Module (501-20 Supplemental Restraint System, Removal and Installation).

DIAGNOSIS AND TESTING

TEST CONDITIONS



VUE0030301

DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the driver air bag connector, clockspring side and the clockspring C763 pin 6, circuit 31S-GJ7 (BWBU) (vehicles without stability assist) or C353 pin 13, circuit 31S-GJ7 (BWBU) (vehicles with stability assist) component side.

- Is the resistance less than 5 ohms?

→ **Yes**

GO to A10.

→ **No**

INSTALL a new clockspring.

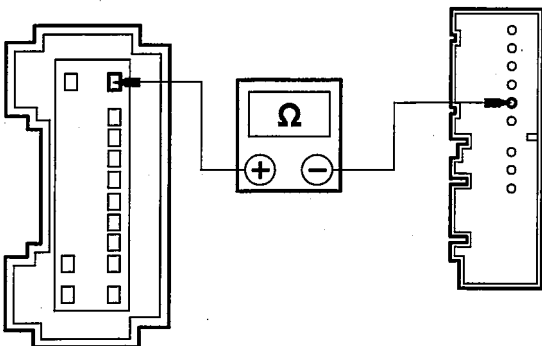
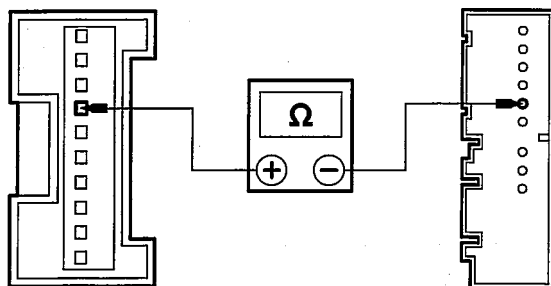
REFER to: Clockspring (501-20 Supplemental Restraint System, Removal and Installation).
TEST the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

A10: CHECK THE CLOCKSPRING CIRCUIT FOR OPEN CIRCUIT



VUE0030302

- 1 Measure the resistance between the driver air bag connector, clockspring side and clockspring C763 pin 7, circuit 31-GJ9 (BK) (vehicles without stability assist) or C353 pin 14, circuit 31-GJ9 (BK) (vehicles with stability assist) component side.

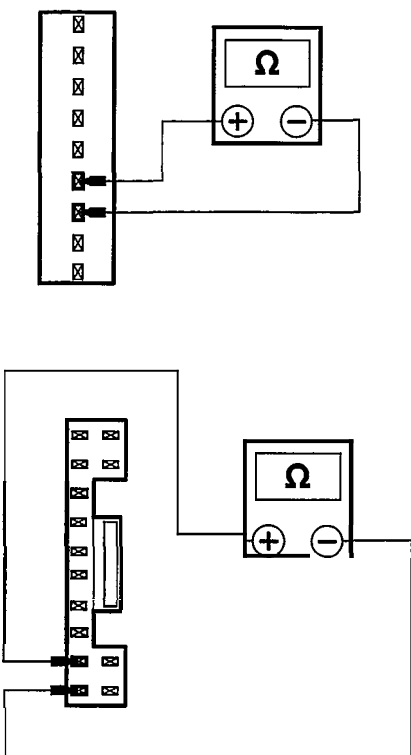
- Is the resistance less than 5 ohms?

→ **Yes**
GO to A11.

→ **No**
INSTALL a new clockspring.

REFER to: Clockspring (501-20 Supplemental Restraint System, Removal and Installation).
TEST the system for normal operation.

DIAGNOSIS AND TESTING

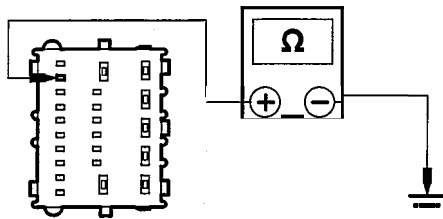
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A11: CHECK THE HORN SWITCH CIRCUIT FOR OPEN CIRCUIT	
 <p>E65211</p>	<p><input type="checkbox"/> Measure the resistance between the clockspring pin 6 and pin 7 (vehicles without stability assist) or pin 13 and pin 14 (vehicles with stability assist) component side while pressing the horn switch.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new GEM. REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation.</p> <p>→ No INSTALL a driver air bag module. REFER to: Driver Air Bag Module (501-20 Supplemental Restraint System, Removal and Installation). TEST the system for normal operation.</p>

PINPOINT TEST B : THE HORN IS ALWAYS ON

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: CHECK THE HORN SWITCH CIRCUIT FOR SHORT TO GROUND	
	<p>1 Disconnect GEM C320.</p> <ul style="list-style-type: none"> Does the horn stop sounding with C320 disconnected? <p>→ Yes GO to B2.</p> <p>→ No INSTALL a new GEM. REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation.</p>
B2: CHECK CIRCUIT 31S-GJ7 (BWBU) FOR SHORT TO GROUND	
	<p><input type="checkbox"/> Disconnect Clockspring C763 - Vehicles Without Stability Assist.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VUE0030287

DETAILS RESULTS ACTIONS

- 2** Disconnect Clockspring C353 - Vehicles With Stability Assist.
- 3** Measure the resistance between the GEM C320 pin 22, circuit 31S-GJ7 (BWBU), harness side and ground.
- Is the resistance greater than 10,000 ohms?
- **Yes**
GO to **B3**.
- **No**
REPAIR the circuit. TEST the system for normal operation.

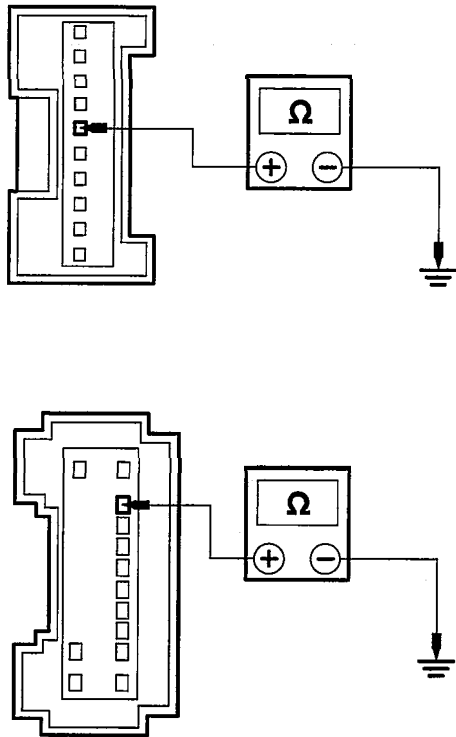
B3: CHECK CLOCKSPRING FOR SHORT TO GROUND

▲ WARNING: To deactivate the driver air bag, refer to the procedure in section 501-20B for the correct air bag deactivation procedure. Failure to follow this instruction, may result in personal injury.

- ☐ Remove the driver air bag module.
- REFER to: Driver Air Bag Module (501-20 Supplemental Restraint System, Removal and Installation).

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the clockspring C763 pin 6, circuit 31S-GJ7 (BWBU) (vehicles without stability assist) or C353 pin 13, circuit 31S-GJ7 (BWBU) (vehicles with stability assist) component side and ground.

- Is the resistance greater than 10,000 ohms?

→ **Yes**

INSTALL a new driver air bag module.

REFER to: Driver Air Bag Module (501-20 Supplemental Restraint System, Removal and Installation).

TEST the system for normal operation.

→ **No**

INSTALL a new clockspring.

REFER to: Clockspring (501-20 Supplemental Restraint System, Removal and Installation).

TEST the system for normal operation.

DIAGNOSIS AND TESTING**Horn — Vehicles Built From: 1012005**

Refer to Wiring Diagrams Section 413-06, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection Chart

Electrical
- Fuse(s)
- Wiring harness

Electrical
- Electrical connector(s)
- Horn switch
- Horn
- Clockspring
- Generic Electronic Module (GEM)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
• The horn is inoperative	<ul style="list-style-type: none"> • Fuse(s). • Circuit(s). • Horn switch. • Horn. • Clockspring. • GEM. 	• GO to Pinpoint Test A.
^a The horn is always on	<ul style="list-style-type: none"> • Clockspring. • Horn switch. • Circuit(s). • GEM. 	• GO to Pinpoint Test B.

Pinpoint Tests

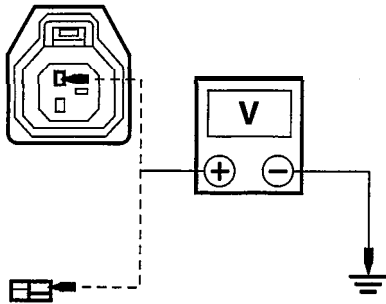
NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST C : THE HORN IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK THE HORN FOR POWER	
	1 Disconnect Horn C413 - All Except Vehicles with 2.0L Duratec-HE (M14) engine or 1.6L Duratorq-TDCi (DV) Diesel engine.
	2 Disconnect Horn C414 - Vehicles with 2.0L Duratec-HE (M14) engine or 1.6L Duratorq-TDCi (DV) Diesel engine.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E65097

DETAILS/RESULTS/ACTIONS

- 3 Measure the voltage between the horn C413 pin 1 or C414 pin 1, circuit 29S-GJ6 (OGNE), harness side and ground while pressing the horn switch.

- Is the voltage greater than 10 volts?

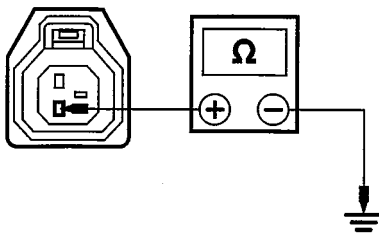
→ **Yes**

All Except Vehicles with 2.0L Duratec-HE (MI4) engine or 1.6L Duratorq-TDCi (DV) Diesel engine, INSTALL a new horn. TEST the system for normal operation.
Vehicles with 2.0L Duratec-HE (MI4) engine or 1.6L Duratorq-TDCi (DV) Diesel engine, GO to A2.

→ **No**

GO to A3.

A2: CHECK THE HORN GROUND CIRCUIT 31-GJ6 (BK)



E65236

- 1 Measure the resistance between the horn C414 pin 2, circuit 31-GJ6 (BK), harness side and ground.

- Is the resistance less than 5 ohms?

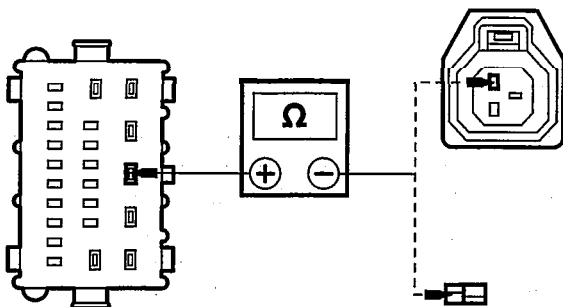
→ **Yes**

INSTALL a new horn. TEST the system for normal operation.

→ **No**

REPAIR the circuit. TEST the system for normal operation.

A3: CHECK CIRCUIT 29S-GJ6 (OGNE) FOR OPEN CIRCUIT



E65105

- ☐ Disconnect GEM C317.

- 2 Measure the resistance between the GEM C317 pin 3, circuit 29S-GJ6 (OG/YE), harness side and the horn C413 pin 1 or C414 pin 1, circuit 29S-GJ6 (OGNE), harness side.

- Is the resistance less than 5 ohms?

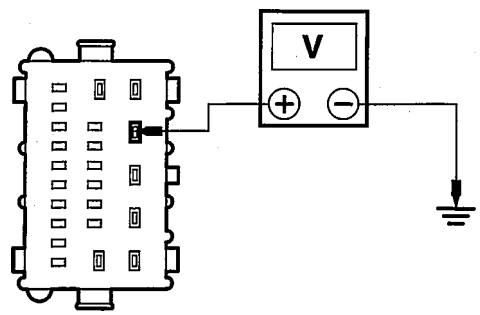
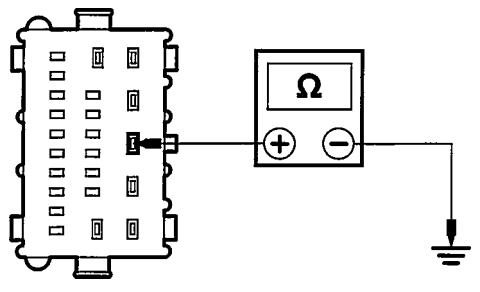
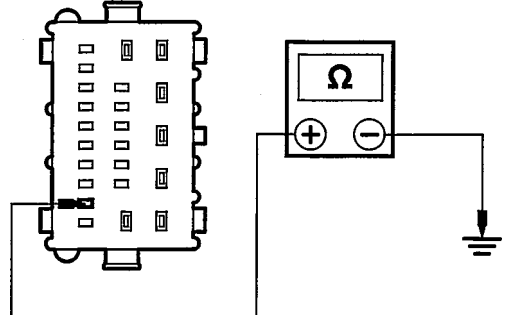
→ **Yes**

GO to A4.

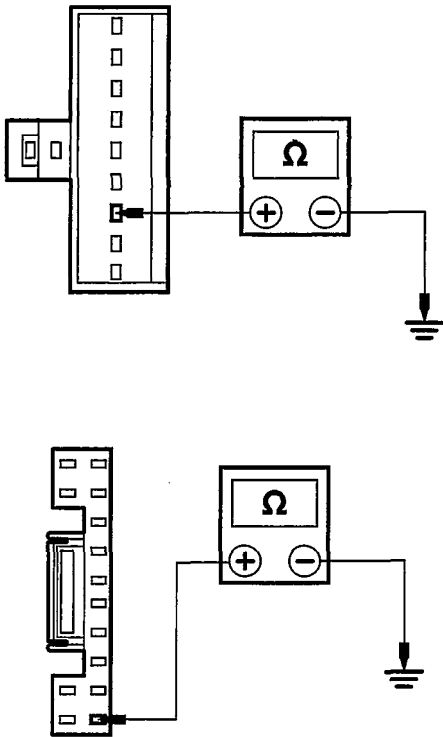
→ **No**

REPAIR the circuit. TEST the system for normal operation.

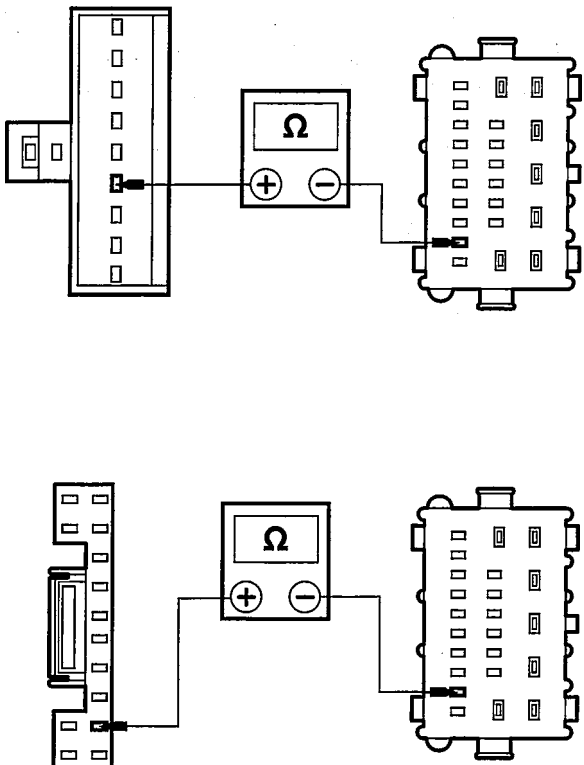
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A4: CHECK THE GEM FOR POWER  E65098	<input type="checkbox"/> Measure the voltage between the GEM C317 pin 4, circuit 29-GJ8 (OG), harness side and ground. <ul style="list-style-type: none"> Is the voltage greater than 10 volts? → Yes GO to A5. → No REPAIR circuit 29-GJ8 (OG). TEST the system for normal operation.
A5: CHECK THE GEM GROUND CIRCUIT 31-DK20 (BK)  E65248	1 Disconnect GEM C318. 2 Measure the resistance between the GEM C318 pin 3, circuit 31-DK20 (BK), harness side and ground. <ul style="list-style-type: none"> Is the resistance less than 5 ohms? → Yes GO to A6. → No REPAIR the circuit. TEST the system for normal operation.
A6: CHECK THE HORN SWITCH CIRCUIT FOR OPEN  E65106	1 Disconnect GEM C320. 2 Measure the resistance between the GEM C320 pin 15, circuit 31S-GJ7 (BWBU), harness side and ground while pressing the horn switch. <ul style="list-style-type: none"> Is the resistance less than 5 ohms? → Yes INSTALL a new GEM. REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation. → No GO to A7.

DIAGNOSIS AND TESTING

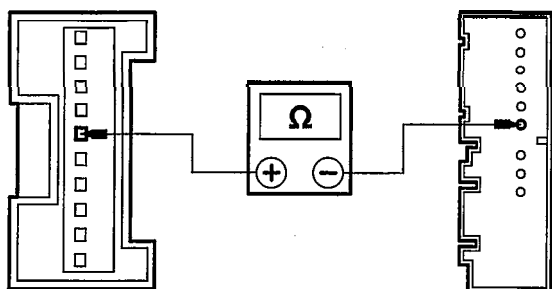
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A7: CHECK THE HORN SWITCH GROUND CIRCUIT	
	<p><input checked="" type="checkbox"/> 1 Disconnect Clockspring C763 - Vehicles Without Stability Assist.</p> <p><input checked="" type="checkbox"/> Disconnect Clockspring C353 - Vehicles With Stability Assist.</p>
 <p>E65112</p>	<p><input type="checkbox"/> Measure the resistance between the clockspring C763 pin 7, circuit 31-GJ9 (BK) (vehicles without stability assist) or C353 pin 14, circuit 31-GJ9 (BK) (vehicles with stability assist), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes GO to A8.</p> <p>→ No REPAIR circuit 31-GJ9 (BK). TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>A8: CHECK CIRCUIT 31S-GJ7 (BK/BU) FOR OPEN CIRCUIT</p>  <p>E65109</p>	<ol style="list-style-type: none"> <li>1 Measure the resistance between the clockspring C763 pin 6, circuit 31S-GJ7 (BWBU) (vehicles without stability assist) or C353 pin 13, circuit 31S-GJ7 (BWBU) (vehicles with stability assist), harness side and the GEM C320 pin 15, circuit 31S-GJ7 (BWBU), harness side. <ul style="list-style-type: none"> <li>• Is the resistance less than 5 ohms? <li>→ Yes GO to A9. <li>→ No REPAIR the circuit. TEST the system for normal operation.
<p>A9: CHECK THE CLOCKSPRING CIRCUIT FOR OPEN CIRCUIT</p> <p>▲ WARNING: To deactivate the driver air bag, refer to the procedure in section 501-20B for the correct air bag deactivation procedure. Failure to follow this instruction, may result in personal injury.</p>	<ol style="list-style-type: none"> <li>1 Remove the driver air bag module. REFER to: Driver Air Bag Module (501-20 Supplemental Restraint System, Removal and Installation).

DIAGNOSIS AND TESTING

TEST CONDITIONS



VUE0030301

DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the driver air bag connector, clockspring side and the clockspring C763 pin 6, circuit 31S-GJ7 (BWBU) (vehicles without stability assist) or C353 pin 13, circuit 31S-GJ7 (BWBU) (vehicles with stability assist) component side.

- Is the resistance less than 5 ohms?

→ **Yes**

GO to A10.

→ **No**

INSTALL a new clockspring.

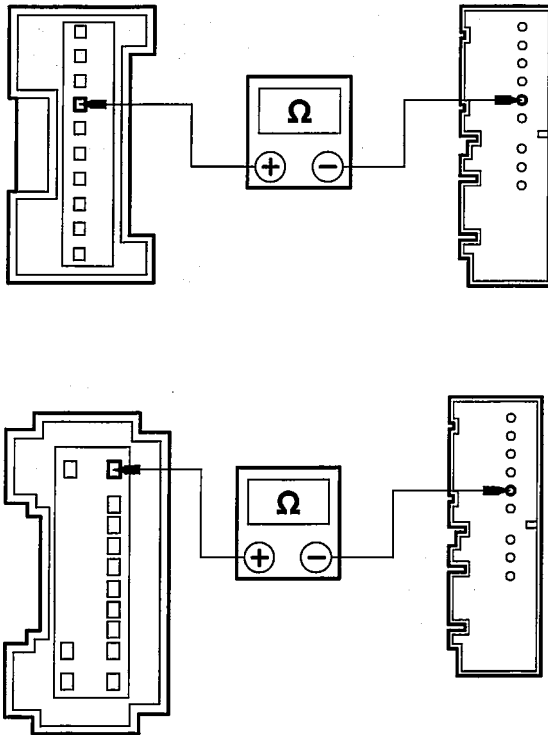
REFER to: Clockspring (501-20 Supplemental Restraint System, Removal and Installation).
TEST the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

A10: CHECK THE CLOCKSPrING CIRCUIT FOR OPEN CIRCUIT



VUE0030302

- 1 Measure the resistance between the driver air bag connector, clockspring side and clockspring C763 pin 7, circuit 31-GJ9 (BK) (vehicles without stability assist) or C353 pin 14, circuit 31-GJ9 (BK) (vehicles with stability assist) component side.

- Is the resistance less than 5 ohms?

→ **Yes**

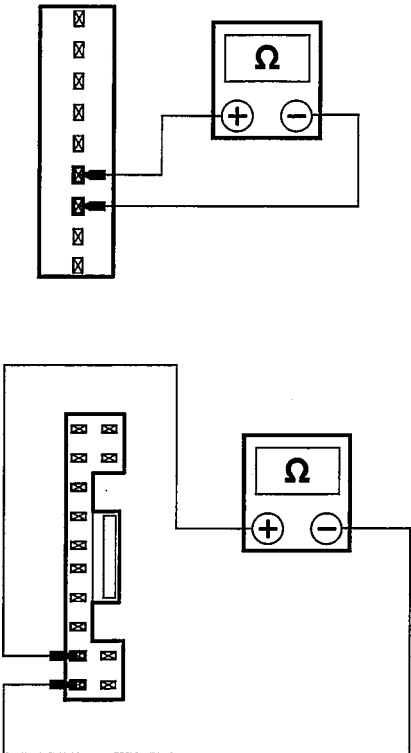
GO to A11.

→ **No**

INSTALL a new clockspring.

REFER to: Clockspring (501-20 Supplemental Restraint System, Removal and Installation).
TEST the system for normal operation.

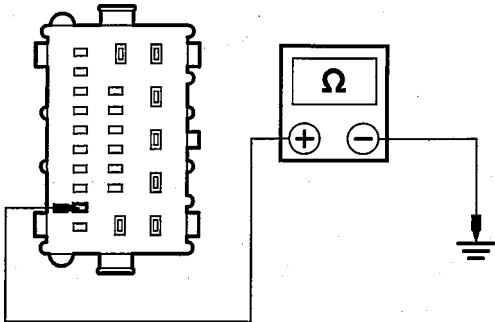
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A II: CHECK THE HORN SWITCH CIRCUIT FOR OPEN CIRCUIT	
 <p>E65211</p>	<p>1 Measure the resistance between the clockspring pin 6 and pin 7 (vehicles without stability assist) or pin 13 and pin 14 (vehicles with stability assist) component side while pressing the horn switch.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new GEM. REFER to: Generic Electronic Module (GEM) (A19-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation.</p> <p>→ No INSTALL a driver air bag module. REFER to: Driver Air Bag Module (501-20 Supplemental Restraint System, Removal and Installation). TEST the system for normal operation.</p>

PINPOINT TEST D : THE HORN IS ALWAYS ON

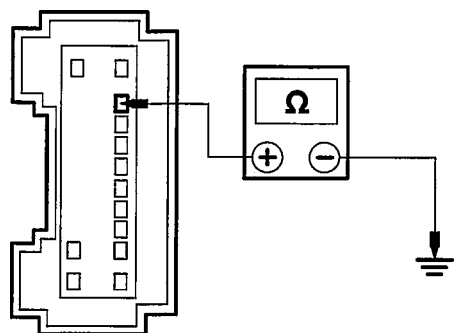
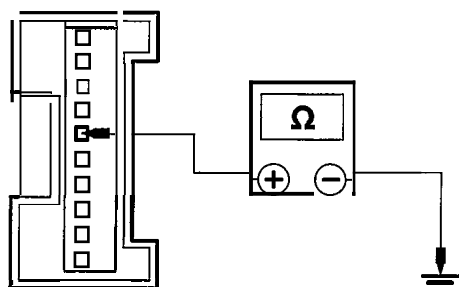
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: CHECK THE HORN SWITCH CIRCUIT FOR SHORT TO GROUND	
	<p>1 Disconnect GEM C320.</p> <ul style="list-style-type: none"> Does the horn stop sounding with C320 disconnected? <p>→ Yes GO to B2.</p> <p>→ No INSTALL a new GEM. REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation.</p>
B2: CHECK CIRCUIT 31S-GJ7 (BKIBU) FOR SHORT TO GROUND	
	<p><input type="checkbox"/> Disconnect Clockspring C763 - Vehicles Without Stability Assist.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 E65106	<div><div>2</div>Disconnect Clockspring C353 - Vehicles With Stability Assist.</div> <div><div></div>Measure the resistance between the GEM C320 pin 15, circuit 31S-GJ7 (BWBU), harness side and ground.<ul style="list-style-type: none">Is the resistance greater than 10,000 ohms?<div><div>→ Yes</div>GO to B3.</div><div><div>→ No</div>REPAIR the circuit. TEST the system for normal operation.</div></div>
B3: CHECK THE CLOCKSPRING FOR SHORT TO GROUND	
<div><div>▲</div>WARNING:To deactivate the driver air bag, refer to the procedure in section 501-20B for the correct air bag deactivation procedure. Failure to follow this instruction, may result in personal injury.</div>	
	<div><div>1</div>Remove the driver air bag module. REFER to: Driver Air Bag Module (501-20 Supplemental Restraint System, Removal and Installation).</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS



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DETAILS RESULTS ACTIONS

- 2 Measure the resistance between the clockspring C763 pin 6, circuit 31S-GJ7 (BWBU) (vehicles without stability assist) or C353 pin 13, circuit 31S-GJ7 (BWBU) (vehicles with stability assist) component side and ground.

- Is the resistance greater than 10,000 ohms?

→ Yes

INSTALL a new driver air bag module.

REFER to: Driver Air Bag Module (501-20 Supplemental Restraint System, Removal and Installation).

TEST the system for normal operation.

→ No

INSTALL a new clockspring.

REFER to: Clockspring (501-20 Supplemental Restraint System, Removal and Installation).

TEST the system for normal operation.

SECTION 413-08 Information and Message Center

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

DIAGNOSIS AND TESTING

Information and Message Center..... 413-08-2

REMOVAL AND INSTALLATION

Message Center..... (33 367 0) 413-08-3

DIAGNOSIS AND TESTING

Information and Message Center

NOTE: The information and message center and the instrument cluster are one component and can not be diagnosed separately.

REFER to Section 413-01 [Instrument Cluster].

REMOVAL AND INSTALLATION**Message Center(33 367 0)**

NOTE: The message center and the instrument cluster are one component and can not be removed separately.

1. Remove the instrument cluster. For additional information, refer to Section 413-01 [Instrument Cluster].

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SECTION 413-09 Warning Devices

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
DIAGNOSIS AND TESTING	
Warning Devices.....	413-09-2
Inspection and Verification.....	413-09-2
REMOVAL AND INSTALLATION	
Low Washer Fluid Warning Indicator Switch..... (33 607 0)	413-09-3

DIAGNOSIS AND TESTING

Warning Devices

Refer to Wiring Diagrams Section 413-09, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

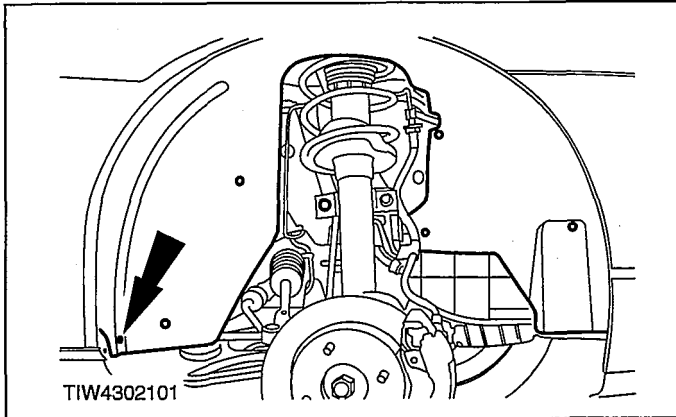
Visual Inspection Chart

Mechanical	Electrical
- Door ajar switch(es)	- Fuse(s) - Wiring harness - Electrical connector(s) - Switch(es) - Generic electronic module (GEM) - Instrument cluster

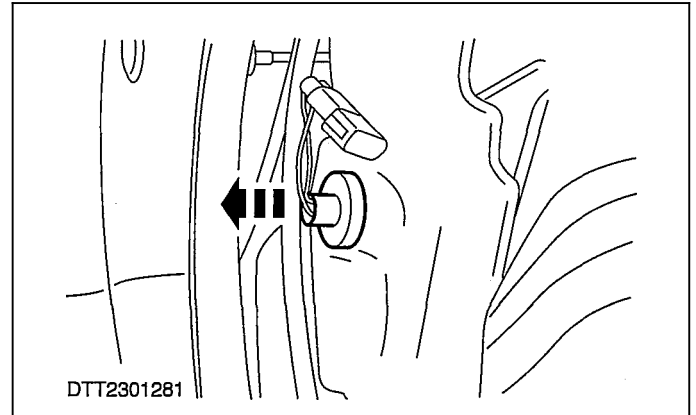
3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to WDS to diagnose the system.

REMOVAL AND INSTALLATION**Low Washer Fluid Warning Indicator Switch(33 607 0)****Removal**

1. Loosen the right-hand side front wheel nuts.
2. Raise and support the vehicle. For additional information, refer to Section **100-02** [Jacking and Lifting].
3. Remove the right-hand side wheel.
4. Remove the fender splash shield.

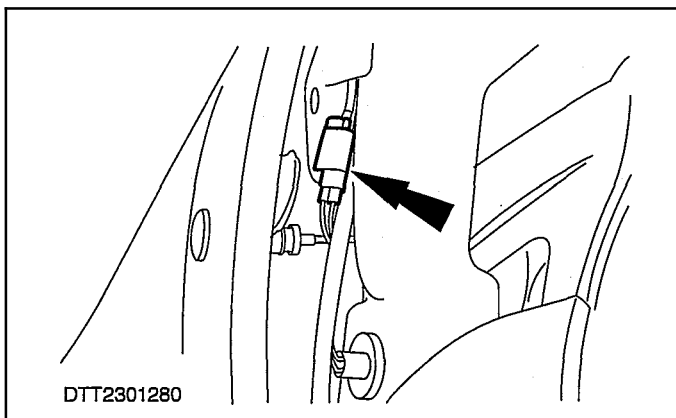


Remove the switch.

**Installation**

1. To install, reverse the removal procedure.

5. Disconnect the low washer fluid level switch electrical connector.



6. **NOTE:** Drain the windshield washer fluid into a suitable container.



SECTION 413-13 Parking Aid

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
DIAGNOSIS AND TESTING	
Parking Aid.....	413-13-2
Inspection and Verification.....	413-13-2
Parking Aid Module Reset Procedure.....	413-13-2
Self-Diagnostic Mode.....	413-13-2
Symptom Chart.....	413-13-3
Pinpoint Test.....	413-13-3
Component Tests.....	413-13-6

DIAGNOSIS AND TESTING

Parking Aid

Refer to Wiring Diagrams Section 413-13, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection Chart

Electrical
<ul style="list-style-type: none"> - Fuse(s) Relay(s) Wiring harness Electrical connector(s) Parking aid sensor(s) Parking aid display and speaker Reversing lamp switch Parking aid module Parking aid resistance plug

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Parking Aid Module Reset Procedure.

Parking Aid Module Reset Procedure

1. Turn the ignition key to position 0.

2. Disconnect the parking aid resistance plug.
3. Turn the ignition key to position II.
4. Select the reverse gear and then deselect the reverse gear.
5. Turn the ignition key to position 0.
6. Connect the parking aid resistance plug.
7. TEST the system for normal operation. If the cause persists, refer to the Self-Diagnostic Mode.

Self-Diagnostic Mode

1. To enter the parking aid module Self-Diagnostic Mode, turn the ignition key to position 0, remove the parking aid resistance plug and make sure the vehicle is in neutral gear.
2. Make sure that no obstacle is within 2 meters of the rear of the vehicle.
3. Turn the ignition key to position II and select reverse gear.
4. Self-Diagnostic Mode will be indicated by an audible tone for three seconds from the parking aid speaker, and is paused for one second.
5. If a concern is detected with a parking aid sensor, the parking aid module will indicate this by emitting an audible tone sequence from the parking aid speaker.
6. If there is a concern with more than one parking aid sensor, a second sequence will be emitted after the first.
7. To exit the Self-Diagnostic Mode, select neutral, turn the ignition key to position 0 and install the parking aid resistance plug.

Audible Tone Sequence

Audible Tone Sequence	Description	Action
ON for three seconds, pause for one second	Opening sequence for concern diagnostics	
ON and OFF once, pause for one second	Right-hand outer sensor concern	REFER to the Component Test in this procedure.
ON and OFF twice, pause for one second	Right-hand inner sensor concern	REFER to the Component Test in this procedure.
ON and OFF three times, pause for one second	Left-hand inner sensor concern	REFER to the Component Test in this procedure.
ON and OFF four times, pause for one second	Left-hand outer sensor concern	REFER to the Component Test in this procedure.

DIAGNOSIS AND TESTING

Audible Tone Sequence	Description	Action
ON for seventy five milliseconds, pause for seventy five milliseconds	Module concern. Low battery voltage. Short in parking aid resistance plug circuit.	GO to Pinpoint Test A.

8. If the concern remains after the Self-Diagnostic Mode, refer to the Symptom Chart.

Symptom Chart**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> A continuous audible tone is emitted 	<ul style="list-style-type: none"> Parking aid sensor(s). Parking aid module. Parking aid resistance plug. 	<ul style="list-style-type: none"> REFER to the Self-Diagnostic Mode.
<ul style="list-style-type: none"> The parking aid speaker has a continuous or intermittent tone when the reverse gear is selected 	<ul style="list-style-type: none"> Parking aid sensor(s) dirty or iced over. Parking aid sensor(s) incorrectly installed. 	<ul style="list-style-type: none"> CLEAN the rear parking aid sensor(s). INSTALL the rear parking aid sensor(s) correctly.
<ul style="list-style-type: none"> Parking aid is inoperative/does not operate correctly 	<ul style="list-style-type: none"> Parking aid module. Reversing lamp switch. Circuit(s). Parking aid speaker. Parking aid resistance plug. 	<ul style="list-style-type: none"> GO to Pinpoint Test A. .

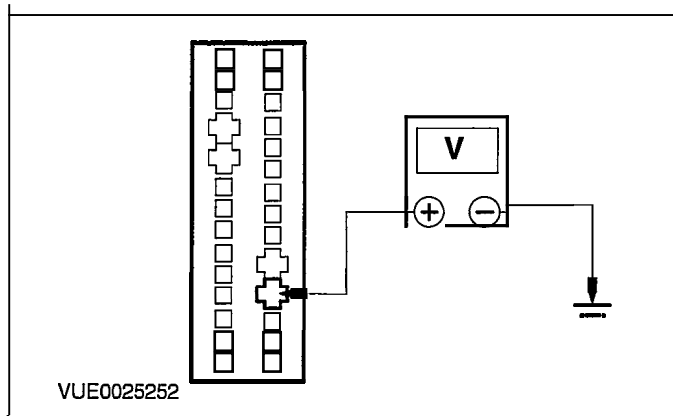
Pinpoint Test**PINPOINT TEST A : PARKING AID IS INOPERATIVE/DOES NOT OPERATE CORRECTLY****TEST CONDITIONS****DETAILS RESULTS ACTIONS**

A1: CHECK THE REVERSING LAMP SWITCH	
	1 Ignition switch in position II.
	2 Select reverse gear.
	<ul style="list-style-type: none"> Is the reversing lamp working?
	→ Yes GO to A2. . → No REFER to Section 417-01 [Exterior Lighting].
A2: CHECK THE PARKING AID MODULE POWER SUPPLY	
	1 Ignition switch in position 0.
	2 Disconnect Parking Aid Module C1015.
	3 Ignition switch in position II.
	4 Select reverse gear.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



☐ Measure the voltage between the parking aid module C1015 pin 18, (RD), harness side and ground.

• Is the voltage greater than 10 volts?

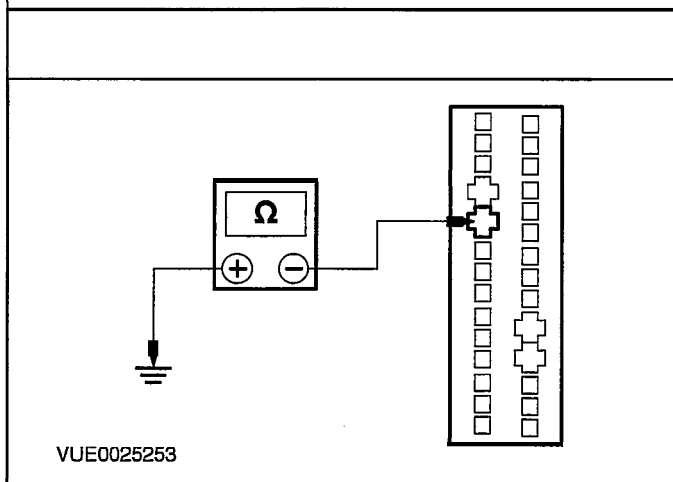
→ **Yes**

GO to A3. .

→ **No**

CHECK and REPAIR the circuit between the parking aid module C1015 pin 18, (RD), harness side and C800 pin 27, (GNNE), harness side. IF the circuit is OK, INSTALL a new parking aid module. TEST the system for normal operation.

A3: CHECK THE PARKING AID MODULE GROUND CIRCUIT



1 Ignition switch in position 0.

2 Measure the resistance between the parking aid module C1015 pin 10, (BN), harness side and ground.

• Is the resistance less than 5 ohms?

→ **Yes**

GO to A4. .

→ **No**

CHECK and REPAIR the circuit between the parking aid module C1015 pin 10, (BN) harness side and ground. IF the circuit is OK, INSTALL a new parking aid module. TEST the system for normal operation.

A4: CHECK THE PARKING AID SPEAKER CIRCUIT

1 Disconnect Parking Aid Speaker C1016.

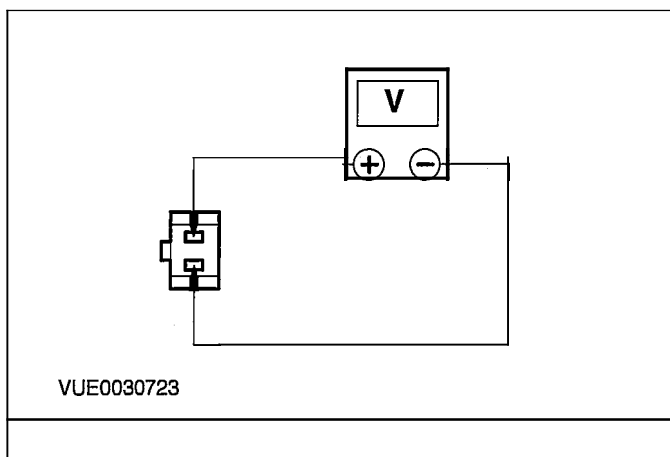
2 Connect Parking Aid Module C1015.

3 Ignition switch in position II.

4 Select reverse gear.

DIAGNOSIS AND TESTING

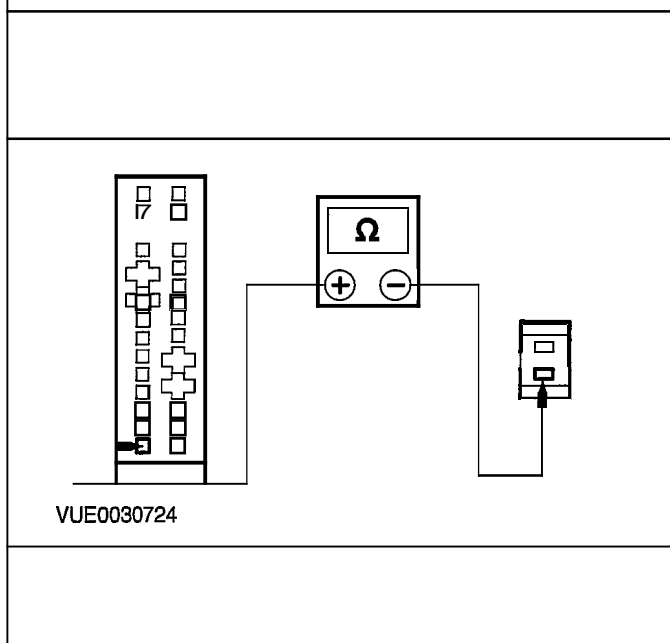
TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

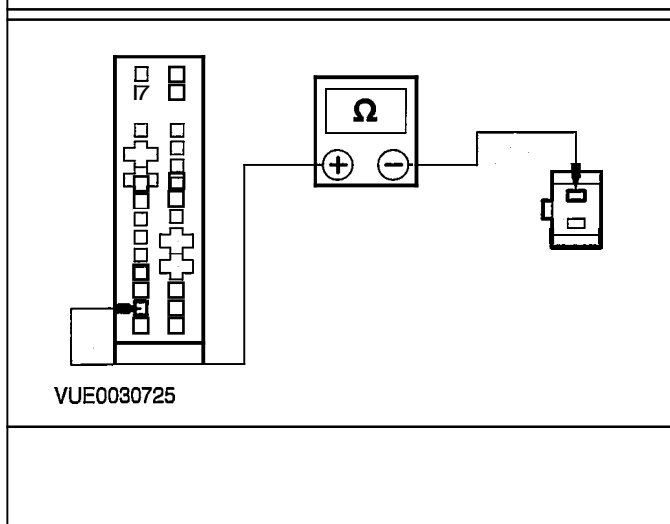
- 5 Place an obstacle within one meter of the parking aid sensor. Measure the voltage between the parking aid speaker C1016 pin 1, (BN), harness side and parking aid speaker C1016 pin 2, (BN/RD), harness side.
- Is the voltage greater than 10 volts?
- **Yes**
INSTALL a new parking aid speaker. TEST the system for normal operation.
- **No**
GO to A5. .

A5: CHECK THE PARKING AID SPEAKER CIRCUIT FOR OPEN



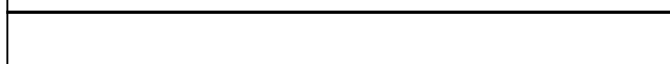
- ☐ Ignition switch in position 0.
- 2 Disconnect Parking Aid Module C1015.
- ☐ Measure the resistance between the parking aid module C1015 pin 1, (BN), harness side and the parking aid speaker C1016 pin 1, (BN), harness side.
- Is the resistance less than 5 ohms?
- **Yes**
GO to A6. .
- **No**
REPAIR the circuit between the parking aid module C1015 pin 1, (BN), harness side and the parking aid speaker C1016 pin 1, (BN), harness side. TEST the system for normal operation.

A6: CHECK THE PARKING AID SPEAKER CIRCUIT FOR OPEN



- 1 Measure the resistance between the parking aid module C1015 pin 2, (BNIRD), harness side and the parking aid speaker C1016 pin 2, (BN/RD), harness side.
- Is the resistance less than 5 ohms?
- **Yes**
GO to A7. .
- **No**
REPAIR the circuit between the parking aid module C1015 pin 2, (BNIRD), harness side and the parking aid speaker C1016 pin 2, (BNIRD), harness side. TEST the system for normal operation.

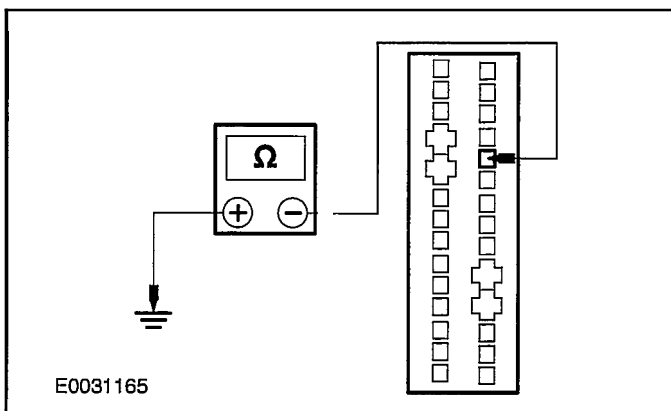
A7: CHECK THE PARKING AID RESISTANCE PLUG CIRCUIT FOR SHORT TO GROUND



- 1 Disconnect Parking Aid Resistance Plug.

DIAGNOSIS AND TESTING

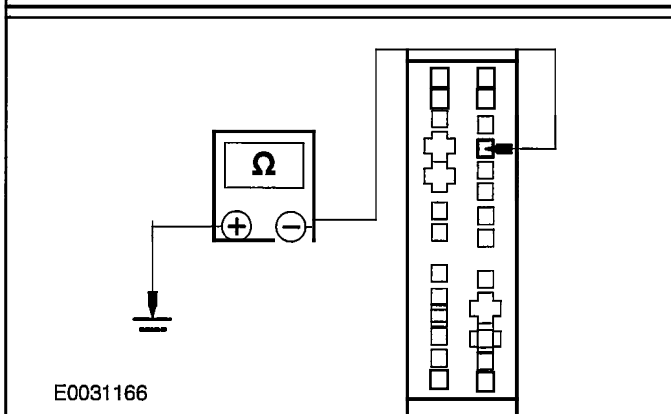
TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the parking aid module C1015 pin 24, (PK), harness side and ground.
- Is the resistance greater than 10,000 ohms?
 - **Yes**
GO to A8.
 - **No**
CHECK and REPAIR the circuit between the parking aid module C1015 pin 24, (PK), harness side and ground. If the circuit is OK, INSTALL a new parking aid resistance plug. TEST the system for normal operation.

A8: CHECK THE PARKING AID RESISTANCE PLUG CIRCUIT FOR SHORT TO GROUND



- 1 Measure the resistance between the parking aid module C1015 pin 25, (PK), harness and ground.
- Is the resistance greater than 10,000 ohms?
 - **Yes**
INSTALL a new parking aid module. TEST the system for normal operation.
 - **No**
CHECK and REPAIR the circuit between the parking aid module C1015 pin 25, (PK), harness and ground. If the circuit is OK, INSTALL a new parking aid resistance plug. TEST the system for normal operation.

Component Tests

Parking Aid Sensor Wiring Harness

NOTE: Refer to the Wiring Diagram, Section 413-13 for Schematic and Connector information.

NOTE: Check the parking aid wiring harness for short to ground, short to battery or damage.

1. Test the parking aid sensor wiring harness using the following table as a guide to meter lead placement as well as expected values.

Parking Aid Sensor C1019	Parking Aid Module C1014	Expected Value	Action
Pin 1	Pin 4	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation

DIAGNOSIS AND TESTING

Parking Aid Sensor C1019	Parking Aid Module C1014	Expected Value	Action
Pin 2	Pin 10	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation
Pin 3	Pin 11	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation
Parking Aid Sensor C1020	Parking Aid Module C1014	Expected Value	Action
Pin 1	Pin 3	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation
Pin 2	Pin 10	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation

DIAGNOSIS AND TESTING

Parking Aid Sensor C1020	Parking Aid Module C1014	Expected Value	Action
Pin 3	Pin 11	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation
Parking Aid Sensor C1021	Parking Aid Module C1014	Expected Value	Action
Pin 1	Pin 2	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation
Pin 2	Pin 10	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation
Pin 3	Pin 11	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation
Parking Aid Sensor C1022	Parking Aid Module C1014	Expected Value	Action
Pin 1	Pin 1	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation

DIAGNOSIS AND TESTING

Parking Aid Sensor C1022	Parking Aid Module C1014	Expected Value	Action
Pin 2	Pin 10	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation
Pin 3	Pin 11	Less than 5 ohms	If the resistance is greater than 5 ohms, CHECK and REPAIR the circuit. If the circuit is OK, INSTALL a new parking aid sensor. TEST the system for normal operation



SECTION 414-00 Charging System - General Information

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
DESCRIPTION AND OPERATION	
Charging System.....	414-00-2
'Smart charge' generator control system.....	414-00-2
DIAGNOSIS AND TESTING	
Charging System.....	414-00-5
Inspection and Verification.....	414-00-5
Symptom Chart.....	414-00-6
Component Tests.....	414-00-7
GENERALPROCEDURES	
Battery Charging..... (31 003 0)	414-00-12

DESCRIPTION AND OPERATION

Charging System

'Smart charge' generator control system

General

The generator creates electrical current to supply the vehicle electrical system and maintain the battery in a charged condition. The generator is driven by the accessory drive belt.

For additional information, refer to: Accessory Drive
- 1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma) (303-05 Accessory Drive, Description and Operation)

/ Accessory Drive - 1.4L Duratorq-TDCi (DV) Diesel (303-05 Accessory Drive, Description and Operation)

/ Accessory Drive - 1.3L Duratec-8V (Rocam) (303-05 Accessory Drive, Description and Operation)

/ Accessory Drive - 1.6L Duratorq-TDCi (DV) Diesel (303-05 Accessory Drive, Description and Operation)

/ Accessory Drive - 2.0L Duratec-HE (MI4) (303-05 Accessory Drive, Description and Operation).

When the engine is started, the generator begins to generate alternating current (AC) which it converts to direct current (DC) internally. The DC current is supplied to the battery and vehicle electrical loads at a voltage controlled by the voltage regulator (located on the back of the generator). The charging system voltage is controlled by the powertrain control module (PCM). The battery is more efficiently charged with a higher voltage when the battery is cold and a lower voltage when the battery is warm. The PCM is able to adjust the charging voltage according to battery temperature, which it calculates based on intake air temperature (IAT) and engine coolant temperature (ECT).

The PCM simultaneously monitors and controls the voltage output of the generator. When the current consumption is high or the battery is excessively discharged, the system is able to increase the idle speed. To minimize the engine drag when starting the engine, the PCM deactivates the generator. When the engine has started, the PCM then progressively increases the output of the generator.

The PCM controls the operation of the charging system warning indicator which is located in the instrument cluster. The PCM is therefore responsible for turning the warning indicator off after the engine is started and illuminating it under fault conditions, the warning indicator will also be illuminated by the PCM at key-on, engine-off, and stall conditions.

The smart charging system consists of the following functions:

- Battery temperature estimation and charging voltage control
- Generator load feed forward
- Generator deactivation during engine crank
- Idle speed increase under low voltage / high electrical load conditions (to increase alternator output and reduce battery discharge)
- Low voltage electrical load deactivation
- Over-voltage activation of electrical loads

By continually calculating the battery temperature and controlling generator output voltage the battery charging current is optimized. The generator load feed forward function gives the PCM advance warning of impending electrical load, and hence impending changes in alternator torque. Using this information, the PCM is able to achieve a greater degree of idle stability. The PCM also controls the generator activation during crank, and the idle speed increase functions. The passenger junction box (PJB) controls the two remaining smart charging functions, low voltage electrical load deactivation and over-voltage activation of electrical loads. When the battery voltage drops below the low voltage threshold, the PJB disables the following components in this order with a 5 second delay between each load deactivation:

- Heated windshield
- Heated rear window
- Air conditioning

The PJB re-enables all previously disabled electrical loads when the battery voltage is above the low voltage threshold. The order for re-enabling loads is air conditioning, then the heated rear window, then the heated windshield, with a 5 second delay between each load reactivation. When re-enabled, the electrical loads are returned to normal mode, therefore the component is switched off awaiting a PJB input signal from the switch. Over-voltage activation of electrical loads

DESCRIPTION AND OPERATION

is enabled when the PJB recognizes the battery voltage is above the over-voltage threshold for a 20 second period, and the charging system warning indicator is on.

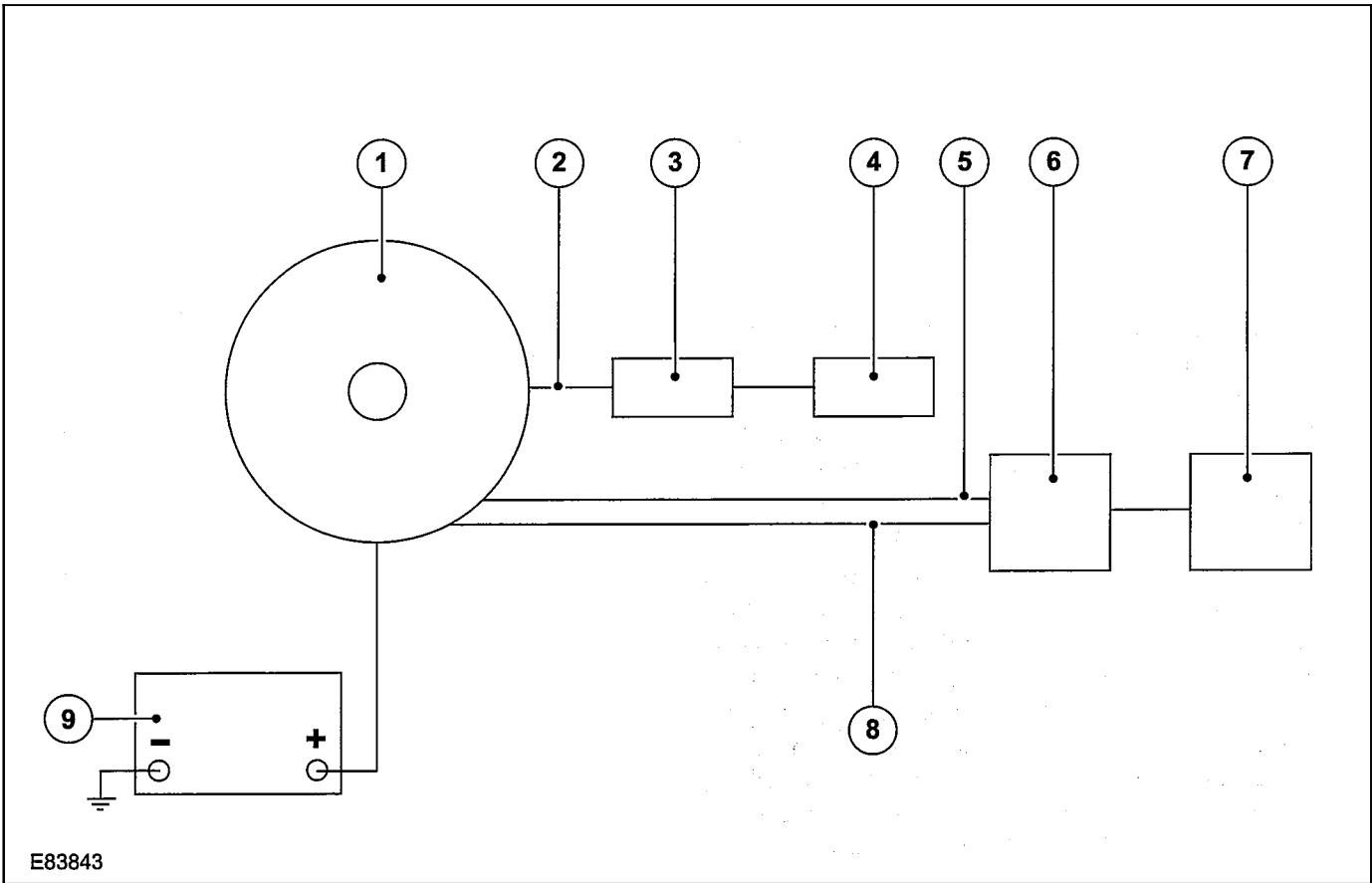
When the threshold is reached the PJB activates the following components in this order with a 5 second delay between each load:

- Heated rear window
- Heated windshield

The purpose of this is to reduce the voltage back within specification, and reduce any overcharging damage to the battery. The PJB returns the electrical loads to normal mode if the battery voltage drops below the high voltage threshold for a 20 second period. This is in order to prevent

excessive battery drain. The order for returning loads to normal mode is heated windshield then heated rear window, with a 5 second delay between each load reactivation. A cycling condition may occur where loads are repeatedly activated and deactivated as the voltage levels increase and decrease. This behavior is to be expected in a continuous over-voltage fault condition, and serves to minimize both damage to the battery due to overcharging, and the battery current drain due to activation of the heated rear window and heated windshield. In normal mode, the electrical loads are switched off awaiting a PJB input signal from the switch. The low voltage threshold is approximately 10.3 volts and the over-voltage threshold is approximately 16 volts.

Schematic of the 'Smart charge' generator control system



Description	
1	Generator
2	Battery voltage sensing line
3	3 Amp fuse
4	Battery junction box (BJB)

Item	Description
5	Generator required output signal from the PCM
6	PCM
7	Instrument cluster

DESCRIPTION AND OPERATION

Item	Description
8	Generator operation monitoring signal to the PCM
9	Battery

Starting the generator during engine starting

In the "smart charge" generator control system", the generator is deactivated during engine starting. The generator is only switched on after the engine has started.

Switching on is done electronically by the PCM. The generator power is then increased smoothly to the value required.

Increased idle speed

At idle with high generator load, the idle speed is increased in order to increase the generator power.

The system can increase the idle speed in steps by up to 150 rev/min above the base idle speed.

Diagnosis

There is a self-test facility for the Smart Charge - System, stored in the PCM and which can be accessed through the WDS. If a fault occurs in the system, the charging system warning indicator is illuminated by the PCM. If voltage regulation fails, the generator operates with a fixed charging voltage of approximately 13.5 Volts.

With fixed charging voltage the generator operates as usual and still delivers enough current for the vehicle systems. After the ignition is switched on, the PCM switches on the charging system warning indicator to check that it operates. After the engine starts the charging system warning indicator is switched off again. During the engine run condition, the charging system warning indicator will only illuminate if the PCM identifies that there is a fault present for a 20 second period. (Voltage out of range, internal generator fault, or PCM to generator communication fault).

DIAGNOSIS AND TESTING

Charging System

Refer to Wiring Diagrams Section 414-02, for schematic and connector information.

General **Equipment**

Surface charge dissipation unit (SCD ²)
Micro390 battery tester

Inspection and Verification

WARNINGS:

▲ Batteries contain sulphuric acid. Avoid contact with skin, eyes, or clothing. Also, shield your eyes when working near batteries to protect against possible splashing of the acid solution. In case of acid contact with skin or eyes, flush immediately with water for a minimum of 15 minutes and get prompt medical attention. If acid is swallowed, call a physician immediately. Failure to follow these instructions may result in personal injury.

▲ Batteries normally produce explosive gases which can cause personal injury. Therefore, do not allow flames, sparks or lighted substances to come near the battery. When charging or working near a battery, always shield your face and

protect your eyes. Always provide ventilation. Failure to follow these instructions may result in personal injury.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> - Accessory drive belt - Generator - Generator decoupler (if equipped) 	<ul style="list-style-type: none"> - Fuse(s) - Wiring harness - Electrical connector(s) - Battery junction box (BJB) - Battery - Battery cables - Charging system warning indicator

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. Check the operation of the charging system warning indicator lamp, located in the instrument cluster. Normal operation is as follows:

Normal Charging System Voltages

Ignition Switch Position	I Circuit	Generator B+ Circuit	Battery	Engine to battery ground	Charging System Warning Indicator Operation
Position 0	0V	10-12V	10-12V	0V	OFF
Position II	0V	10-12V	10-12V	0V	Illuminated
Position II with the engine running	13-15V	13-15V	13-15V	0V	OFF

5. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

DIAGNOSIS AND TESTING**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The charging system warning indicator is on with the engine running (The charging system voltage does not increase) 	<ul style="list-style-type: none"> Accessory drive belt. 	<ul style="list-style-type: none"> CHECK the accessory drive belt condition, REFER to: Accessory Drive (303-05 Accessory Drive, Diagnosis and Testing).
	<ul style="list-style-type: none"> Circuit. Generator. Voltage regulator. 	<ul style="list-style-type: none"> CARRY OUT the generator tests, REFER to the Generator On-Vehicle Tests in Component Tests in this section.
<ul style="list-style-type: none"> The charging system warning indicator is off with the ignition switch in the RUN position and the engine off 	<ul style="list-style-type: none"> Bulb. 	<ul style="list-style-type: none"> INSTALL a new bulb.
	<ul style="list-style-type: none"> Ignition switch. 	<ul style="list-style-type: none"> CHECK the ignition switch.
	<ul style="list-style-type: none"> Circuit. Generator. 	<ul style="list-style-type: none"> CARRY OUT the generator tests, REFER to the Generator On-Vehicle Tests in Component Tests in this section.
<ul style="list-style-type: none"> Radio interference 	<ul style="list-style-type: none"> Circuit. Generator. 	<ul style="list-style-type: none"> REFER to the WDS
<ul style="list-style-type: none"> The generator is noisy 	<ul style="list-style-type: none"> Accessory drive belt. 	<ul style="list-style-type: none"> REFER to: Accessory Drive (303-05 Accessory Drive, Diagnosis and Testing).
	<ul style="list-style-type: none"> Loose generator mounting bolts. 	<ul style="list-style-type: none"> TIGHTEN the generator mounting bolts.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
	<ul style="list-style-type: none"> Generator. 	<ul style="list-style-type: none"> INSTALL a new generator. <p>REFER to: Generator - 1.3L Duratec-8V (Rocam) (414-02 Generator and Regulator, Removal and Installation) / Generator - 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma) (414-02 Generator and Regulator, Removal and Installation) / Generator - 1.4L Duratorq-TDCi (DV) Diesel (414-02 Generator and Regulator, Removal and Installation) / Generator - 2.0L Duratec-HE (M14) (414-02 Generator and Regulator, Removal and Installation) / Generator - 1.6L Duratorq-TDCi (DV) Diesel, Vehicles With: Air Conditioning (414-02 Generator and Regulator, Removal and Installation) / Generator - 1.6L Duratorq-TDCi (DV) Diesel, Vehicles Without: Air Conditioning (414-02 Generator and Regulator, Removal and Installation).</p>
<ul style="list-style-type: none"> Vehicle electrical systems inoperative 	<ul style="list-style-type: none"> Battery. 	<ul style="list-style-type: none"> CARRY OUT the battery test, REFER to the Battery Test in Component Tests in this section.
<ul style="list-style-type: none"> The engine cranks slowly 	<ul style="list-style-type: none"> Battery. 	<ul style="list-style-type: none"> CARRY OUT the battery test, REFER to the Battery Test in Component Tests in this section.
	<ul style="list-style-type: none"> Battery cable(s). Starter motor. 	<ul style="list-style-type: none"> REFER to: Starting System (303-06 Starting System, Diagnosis and Testing).

Component Tests**Generator On-Vehicle Tests * No-Load Test**

1. Turn off all electrical loads and the ignition switch.
2. Switch the multimeter to the voltage function.

3. Connect the leads of the multimeter across the battery terminals.
4. Read the voltage (base voltage).
5. Start the engine.
6. Run the engine at 1500 rpm with no electrical load.
7. Read the voltage. The voltage should be in the range of 14.1 volts to 15.1 volts. If the voltage increase is less than 2.5 volts above the base

DIAGNOSIS AND TESTING

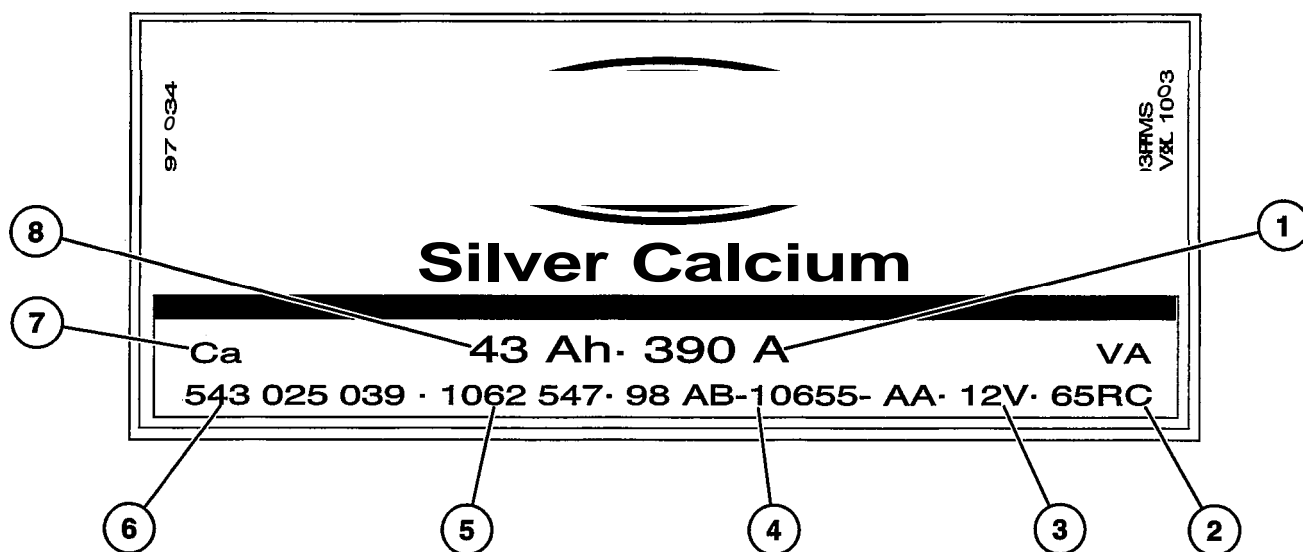
voltage, carry out the Load Test. If the voltage increase is greater than 2.5 volts, REFER to the WDS.

Generator On-Vehicle Tests - Load Test

1. With the engine running, turn on the air conditioning (if equipped), turn the blower motor to high speed and the headlamps to high beam.

2. Increase the engine speed to 2000 rpm. The voltage should increase a minimum of 0.5 volts above the base voltage. If the voltage does not increase as specified, REFER to the WDS. If the voltage increases as specified, the charging system is charging correctly. REFER to the Symptom Chart.

Battery Identification



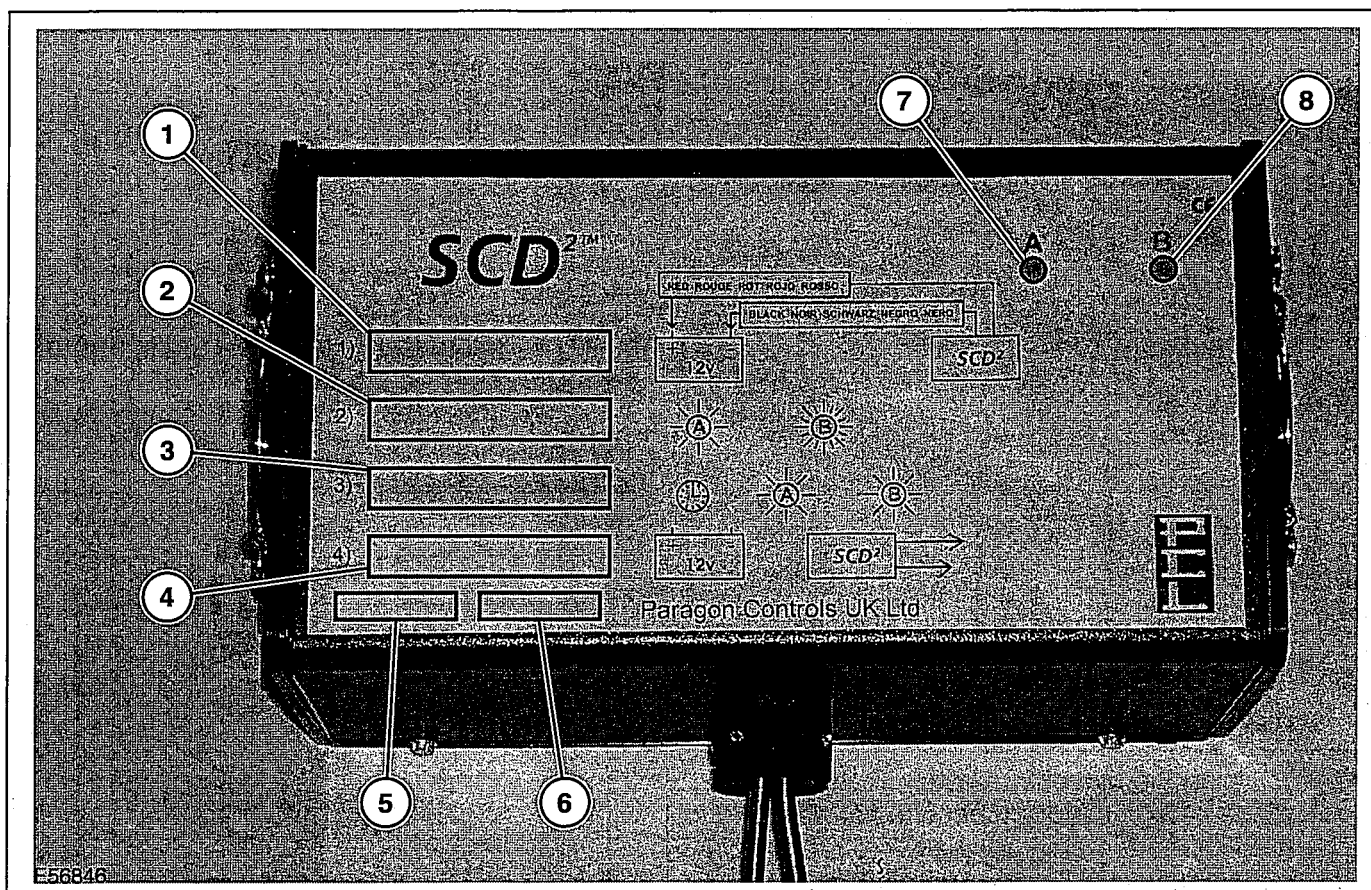
Z0212058

Item	Description
1	Cold crank amp (CCA) rating
2	Reserve capacity (RC) rating (minutes)
3	Battery voltage
4	Ford Part number

Item	Description
5	FINIS code
6	EN number (European Norm)
7	Battery type: Ca = Silver/Calcium; Sb = Lead/Antimony
8	Amp hour rating

DIAGNOSIS AND TESTING

Battery Surface Charge Removal

Surface charge dissipation unit (SCD²)

Item	Description
1	Connect black lead to battery - Connect red lead to battery +
2	Red A indicator illuminates and green B indicator flashes
3	Wait until green B indicator illuminates
4	Disconnect from battery
5	Max 18v
6	-20°C to +55°C
7	Red indicator (A)
8	Green indicator (B)

CAUTION: Prior to testing any battery, the surface discharge must be dissipated. This includes batteries that are returned disconnected from the vehicle. If the battery is holding a surface charge, the battery tester will give false readings.

NOTE: The SCD² tool eliminates the need to dissipate the battery's surface charge via the manual process of loading the battery via the

operation of the vehicles electrical systems. It also removes the variability in the process and makes sure that the actual dissipation of the surface charge is qualified prior to testing.

1. Connect the black lead to the battery negative terminal and the red lead to the battery positive terminal.
2. The red indicator (A) illuminates and the green indicator (B) flashes.
3. Wait until the green indicator (B) fully illuminates, then disconnect from the battery.

Alternative Method To Dissipate The Battery Surface Charge

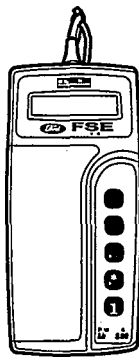
1. Leave the battery to stand for a minimum of six hours without charging or discharging or remove the surface charge through partial loading as follows:
 - Turn the ignition key to position II and switch on the headlamps (main beam), heated windshield (if equipped), heated rear window (if equipped) and the heater blower motor

DIAGNOSIS AND TESTING

(position II). Leave the vehicle in this condition for a minimum of 60 seconds to dissipate the battery surface charge.

- Turn the ignition key to position 0 and switch off the headlamps, heated windshield (if equipped), heated rear window (if equipped) and the heater blower motor. Leave the vehicle in this condition for a minimum of five minutes before testing battery condition.

Battery Test



TIZ0212063

NOTE: Using the Micro390 Battery Tester: To fully determine battery condition once the surface charge has been dissipated, the Micro390 battery tester must be used. For the Micro390 battery tester to operate, it requires a minimum of 5.5 volts charge to be present on the test battery. Therefore, if the Micro390 does not operate when connected to a test battery, then a charge of less than 5.5 volts is present. In this instance, the battery must be charged in line with the battery charging instructions prior to testing. In the event of a conflict of results between the charge eye indicator and the battery tester, the battery tester result must always be used. The charge eye indicator is for guidance only.

1. Connect the battery tester to the battery.
 - Connect the red clip to the battery positive (+) terminal and the black clip to the battery negative (-) terminal.

XXX CCA (SAE)

SET CCA RATING

TIZ0212059

2. **NOTE:** The label affixed to the top of batteries progressively from 0611998 identifies the battery CCA rating. Remove the battery if the label is obscured.

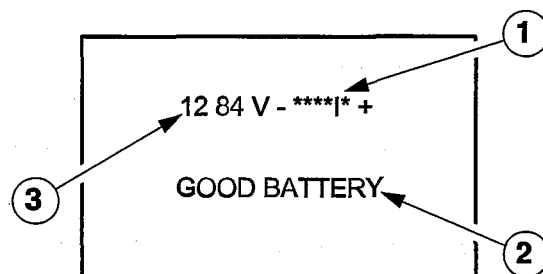
Use the "Arrow" buttons on the battery tester to scroll to the battery's labelled CCA rating.

XXX CCA (SAE)

TESTING

TIZ0212060

3. Press the "Test" button that corresponds to the correct battery temperature.
 - If the battery temperature is above zero degrees centigrade: press the "sun" button. If the battery temperature is below zero degrees centigrade: press the "Ice-crystal" button.



TIZ0212061

4. Carry out the action based upon the test result displayed and the following table.
 1. Charge level bar graph.

DIAGNOSIS AND TESTING

2. Test result.
3. Battery voltage.

5. Press the "information" button and carefully note the six-digit "Test Code" on the job card for claim submission and audit purposes (graphic shows an example of the code only).

7CA JLK

TIZ0212062

Battery tester results and required actions

Tester Reading	Action
GOOD BATTERY	Return to service
GOOD RECHARGE	Fully charge the battery and return to service*
CHARGE & RETEST	Fully charge the battery and retest
REPLACE BATTERY or BAD CELL BATTERY	<p>▲ WARNING: Do not recharge the battery.</p> <p>Make sure that the surface charge was removed. If so, disconnect the battery from the vehicle and retest. If the result remains after surface charge removal, install a new battery.</p>
UNABLE TO TEST	Disconnect the battery from the vehicle and retest.

*In addition, it is advisable to check the vehicle electrical system. Check that the generator is functioning correctly and that all key-off loads (luggage compartment lamps, glove compartment lamp and interior lamps) are not staying on.

GENERAL PROCEDURES

Battery Charging(31 003 0)

■ **WARNINGS:**

▲ **Keep** batteries out of reach of children. Batteries contain sulphuric acid, avoid contact with skin, eyes or clothing. Shield your eyes when working near the battery to protect against possible splashing of the acid solution. In case of acid contact with the skin or the eyes, flush immediately with water for a minimum of **15** minutes and seek prompt medical attention. If acid is swallowed, call a physician immediately. Failure to follow these instructions may result in personal injury.

▲ **Batteries** normally produce explosive gases which can cause personal injury, therefore do not allow flames, sparks or lighted substances to come near the battery. When charging or working near the battery always shield your face and protect your eyes. Always provide adequate ventilation. Failure to follow these instructions may result in personal injury.

▲ **Always** observe all manufacturers instructions when using any charging equipment. Failure to follow this instruction may result in personal injury.

▲ **Connect** the charger to the battery before switching the charger on. Failure to follow this instruction may result in personal injury.

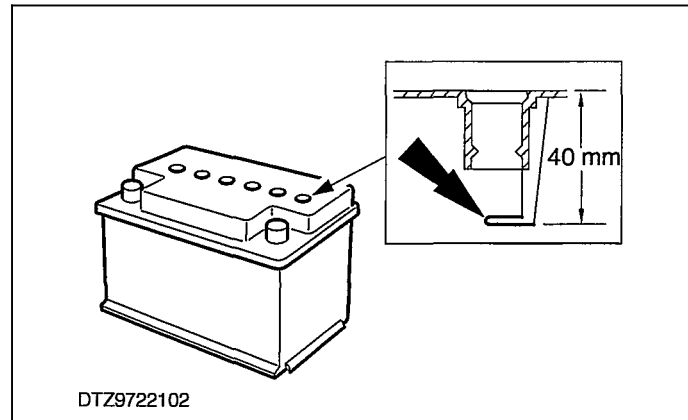
▲ **Switch** the charger off before disconnecting the charger from the battery. Failure to follow this instruction may result in personal injury.

CAUTIONS:

- ⚠ Batteries should not be charged in the vehicle.
- ⚠ Do not rely on the generator to recharge a discharged battery as it would take in excess of eight hours of continuous driving with no additional loads placed on the charging system.

NOTE: The maximum level mark is approximately 40mm below the top of the battery.

Place the battery on a level surface and check the electrolyte level through the casing, reaches the indicated maximum mark.



▲ **WARNING:** It is important not to overfill a battery, as this can cause acid leakage and corrosion damage to the vehicle. Failure to follow this instruction may result in personal injury.

2. If the level is below the maximum mark, remove the vent covers and top up the **cell(s)** to the correct level.
3. Cold batteries will not readily accept a charge. Therefore batteries should be allowed to warm up to approximately 5°C. (41°F.) before charging. This may require four to eight hours at room temperature depending on the initial temperature and the battery size.
4. A battery which has been completely discharged may be slow to accept a charge initially, and in some cases may not accept a charge at the normal charger setting. When batteries are in this condition, charging can be started by use of the dead battery switch on chargers that have this facility equipped.
5. To determine whether a battery is accepting a charge, follow the manufacturer's instructions for the charger, for use of the dead battery switch. If the switch is the spring-loaded type, it should be held in the ON position for up to three minutes.
6. After releasing the dead battery switch and with the charger still on, measure the battery voltage. If it shows **12** volts or higher, the battery is accepting a charge and is capable of being recharged. However, it may require

GENERAL PROCEDURES

up to two hour of charging with batteries colder than **5°C (41°F)** before the charge rate is high enough to show a charge on an ammeter. It has been found that all non-damaged batteries can be charged by this procedure. If a battery cannot be charged by this procedure, a new one should be installed.

7. A rapid recharger procedure has been developed for recharging batteries that have passed the Load Test and only need a recharge. This can be due to in-service no-start battery failures (vehicle will not crank due to low battery state of charge) or battery discharged in vehicle due to key-off loads.
8. With the cables then disconnected, the battery can be rapidly recharged by using either of the following methods:
 - Carry out a two hour charge using 20A constant current (manual setting on charger).
 - Carry out a two hour charge using a constant potential (automatic setting on charger).



SECTION 414-01 Battery, Mounting and Cables

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SPECIFICATIONS	
Specifications.....	414-01-2
DIAGNOSIS AND TESTING	
Battery.....	414-01-3
GENERAL PROCEDURES	
Battery Disconnect.....	414-01-4
REMOVAL AND INSTALLATION	
Battery Tray..	(44 271 4) 414-01-5
Battery to Starter Motor Solenoid Cable — 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	(36 206 0) 414-01-8
Battery Tray — 2.0L Duratec-HE (M14).....	(44 271 4) 414-01-10
Battery Cables — 2.0L Duratec-HE (M14).....	414-01-12



SPECIFICATIONS**Battery Specifications**

Ah Rating	Battery Type	Build date that Ca battery can be installed from
43	Silver Calcium (Ca)	08/1995
50	Silver Calcium (Ca)	08/1995
60	Silver Calcium (Ca)	08/1995

Torque Specifications

Description	Nm	lb-ft	lb-in
Battery clamp retaining nuts	8	-	71
Battery positive terminal retaining nut	5	-	44
Battery positive terminal cable retaining nut	12	9	-
Battery ground terminal retaining nut	5		44
Battery ground terminal cable retaining nut	8		71
Battery tray retaining bolts	12	9	-
Generator positive cable retaining nut - vehicles with 1.25L Duratec-16V (Sigma)/1.3L Duratec-8V (Rocam)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma) engines	8	-	71
Generator positive cable retaining nut - vehicles with 1.4L Duratorq-TDCi (DV) Diesel/1.6L Duratorq-TDCi (DV) Diesel/2.0L Duratec-HE (MI4) engines	15	11	-
Starter motor positive cable retaining nut - all vehicles	12	9	-
Ignition switch to starter motor cable retaining nut - vehicles with 1.4L Duratorq-TDCi (DV) Diesel// 1.6L Duratorq-TDCi (DV) Diesel/2.0L Duratec-HE (MI4) engines	6	-	53
Ignition switch to starter motor cable retaining nut - vehicles with 1.25L Duratec-16V (Sigma)/1.3L Duratec-8V (Rocam)/1.4L Duratec-16V (Sigma)/ 1.6L Duratec-16V (Sigma) engines	7		62

DIAGNOSIS AND TESTING**Battery**

REFER to: Charging System (414-00 Charging System - General Information, Diagnosis and Testing).

GENERAL PROCEDURES

Battery Disconnect

Disconnect

WARNINGS:

▲ Batteries normally produce explosive gases which may cause personal injury, therefore do not allow flames, sparks or lighted substances to come near the battery. When charging or working near the battery always shield your face and protect your eyes. Always provide adequate ventilation. Failure to follow these instructions may result in personal injury.

▲ Batteries contain sulphuric acid, avoid contact with skin eyes or clothing. Shield your eyes when working near the battery to protect against possible splashing of the acid solution. In case of acid contact with the skin or eyes, flush immediately for a minimum of 15 minutes and seek prompt medical attention. If swallowed, call a physician immediately. Failure to follow these instructions may result in personal injury.

▲ Audio unit key code saving devices must not be used when working on supplemental restraint or fuel systems. When using these devices the vehicle electrical system is still live but with a reduced current flow. Failure to follow this instruction may result in personal injury.

⚠ **CAUTION:** Make sure the engine is not running before disconnecting the battery ground cable to avoid damage to the vehicle electrical system.

NOTE: This procedure should be used to disconnect the battery while carrying out repairs that refer to the battery being disconnected.

1. Obtain and record the audio unit **keycode** and preset radio frequencies.
2. Disconnect the battery ground cable.

Connect

WARNINGS:

▲ Batteries normally produce explosive gases which may cause personal injury, therefore do not allow flames, sparks or lighted substances to come near the

battery. When charging or working near the battery always shield your face and protect your eyes. Always provide adequate ventilation. Failure to follow these instructions may result in personal injury.

▲ Batteries contain sulphuric acid, avoid contact with skin eyes or clothing. Shield your eyes when working near the battery to protect against possible splashing of the acid solution. In case of acid contact with the skin or eyes, flush immediately for a minimum of 15 minutes and seek prompt medical attention. If swallowed, call a physician immediately. Failure to follow these instructions may result in personal injury.

⚠ **CAUTION:** Make sure all electrical systems are switched OFF before connecting the battery ground cable to avoid damage to the vehicle electrical system.

1. Connect the battery ground cable.
2. Enter the audio unit **keycode** and preset radio frequencies.
3. Reset the clock to the correct time.

REMOVAL AND INSTALLATION

Battery Tray(44 271 4)

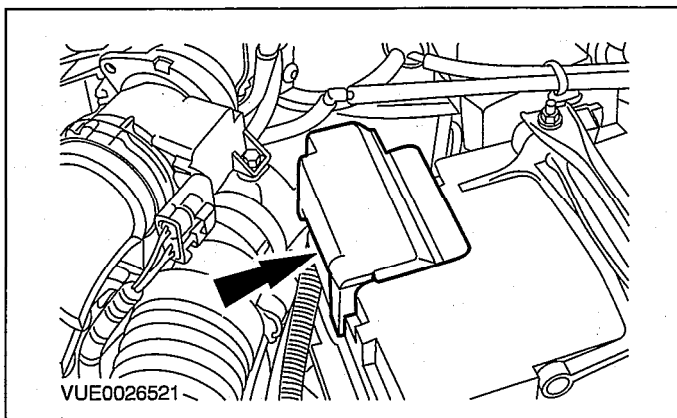
Removal

All vehicles

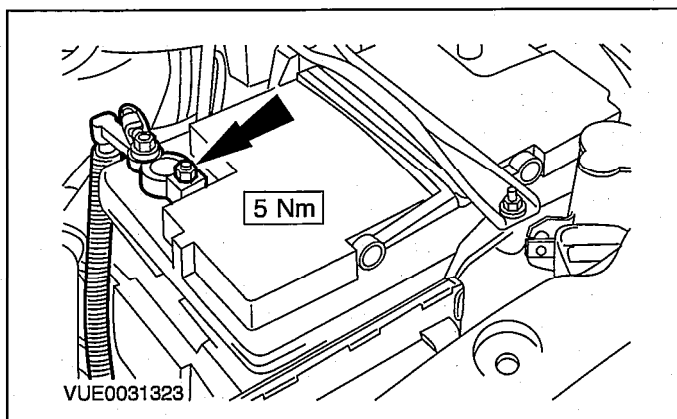
1. Disconnect the battery ground cable.

For additional information, refer to: Battery Disconnect (414-01 Battery, Mounting and Cables, General Procedures).

2. Open the battery positive terminal cover.

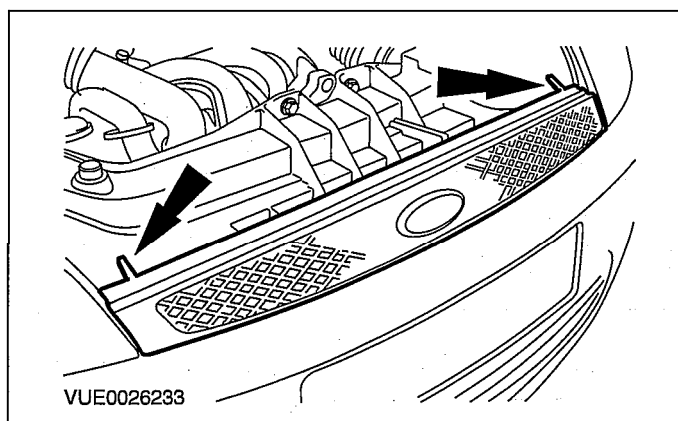


3. Disconnect the battery positive cable and position it to one side.

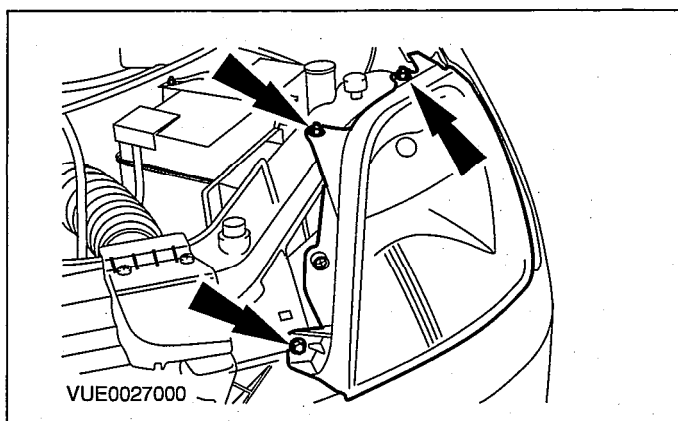


All except vehicles with diesel engine

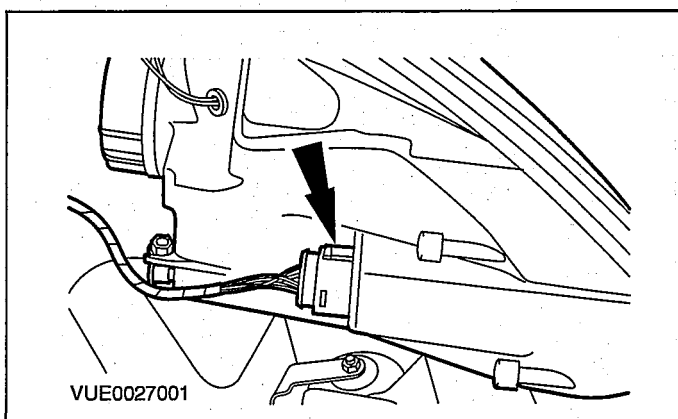
4. Remove the radiator grill.



5. Detach the left-hand **headlamp** assembly.

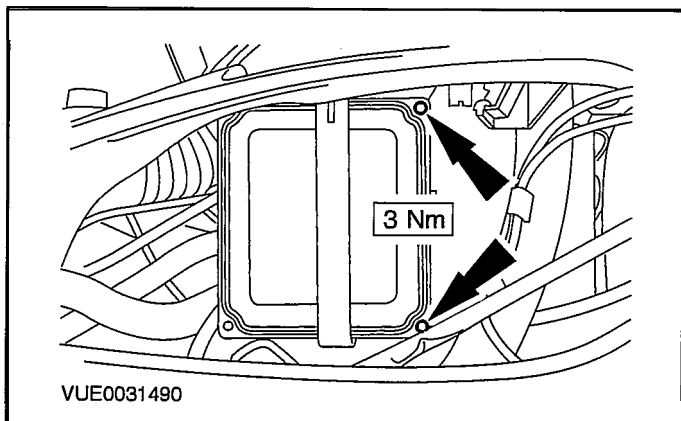


6. Disconnect the electrical connector and remove the **headlamp** assembly.

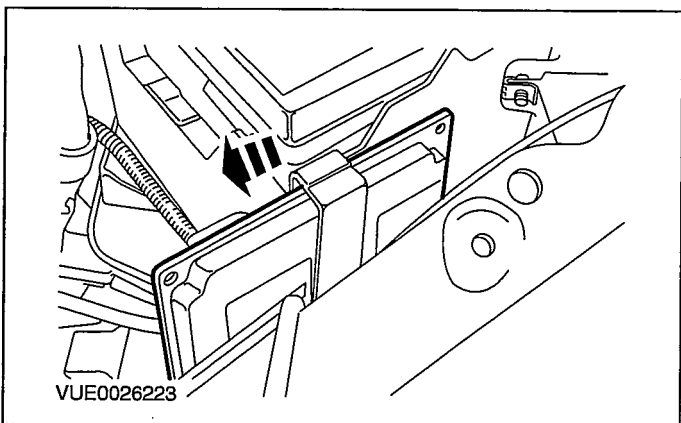


REMOVAL AND INSTALLATION

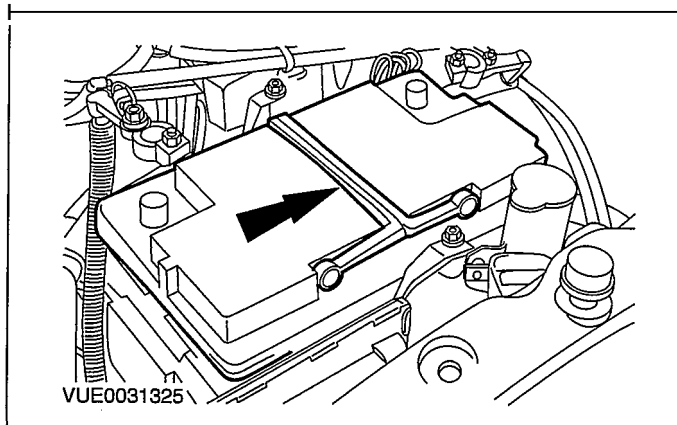
7. Remove the powertrain control module (PCM) retaining screws.



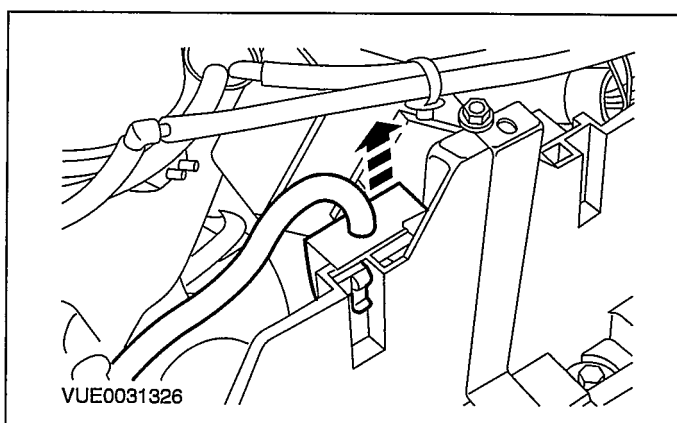
8. Detach the PCM from the retaining bracket.



10. Remove the battery.



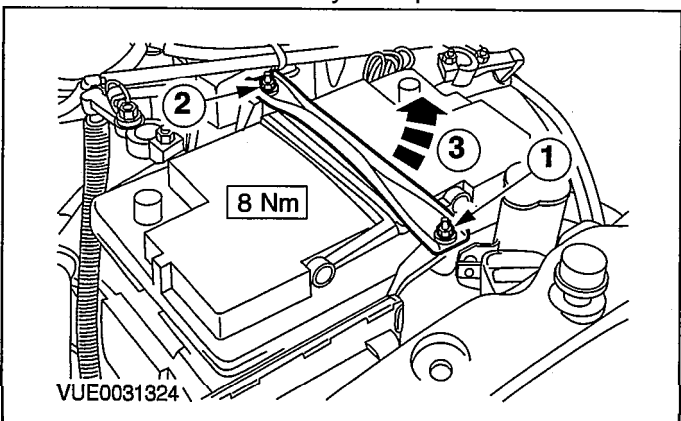
11. Detach the battery junction box (BJB) from the battery tray and position it to one side.



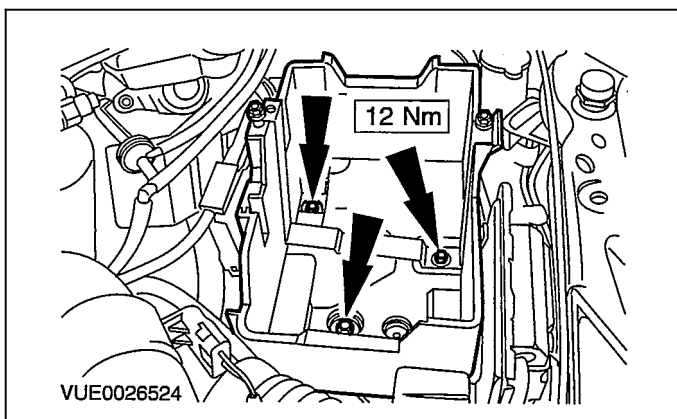
All vehicles

9. Detach the battery clamp from the battery tray and position it to one side.

1. Remove the battery clamp front retaining nut.
2. Remove the battery clamp rear retaining nut.
3. Unhook the battery clamp.



12. Remove the battery tray.




Installation



CAUTION: If installing a new battery, only install the specified battery type.

For additional information, refer to: Specifications (414-01 Battery, Mounting and Cables, Specifications).

REMOVAL AND INSTALLATION

 **CAUTION:** When installing the battery clamp, make sure that the rear retaining nut is tightened first. Failure to follow this instruction may result in damage to the battery.

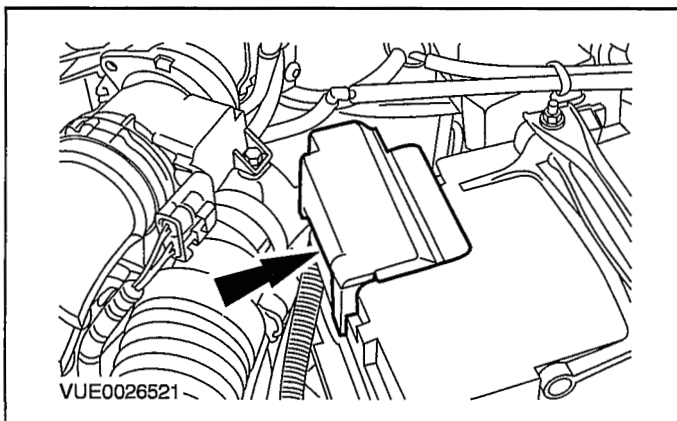
To install, reverse the removal procedure.

REMOVAL AND INSTALLATION**Battery to Starter Motor Solenoid Cable — 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)(36 206 0)****Removal**

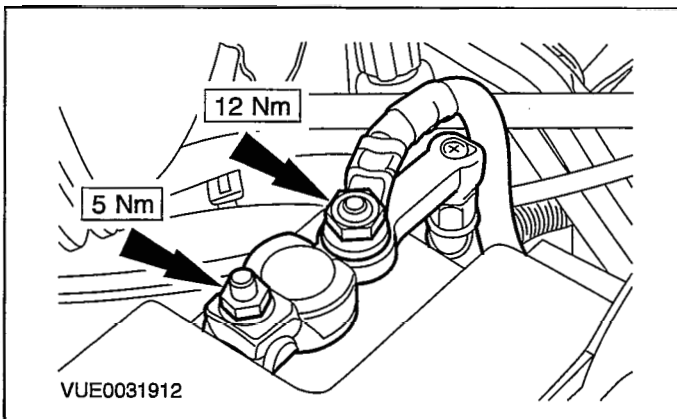
1. Disconnect the battery ground cable.

For additional information, refer to Battery Disconnect in this section.

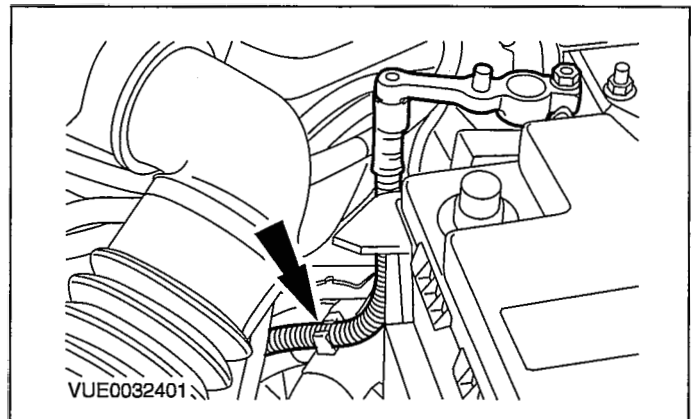
2. Open the battery positive terminal cover.



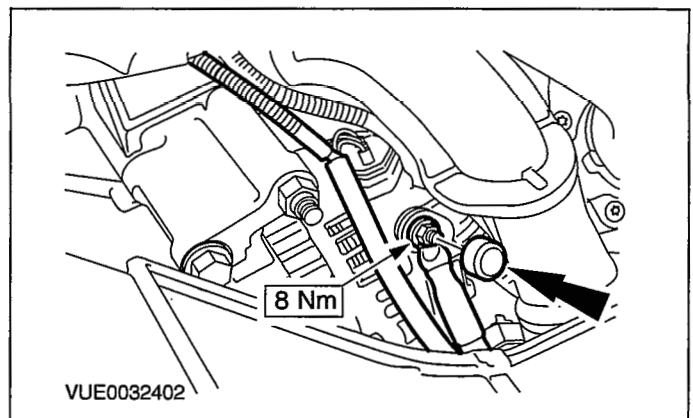
3. Disconnect the battery positive cables.



4. Detach the battery to starter motor solenoid cable from the retaining clip on the wiring harness cover.



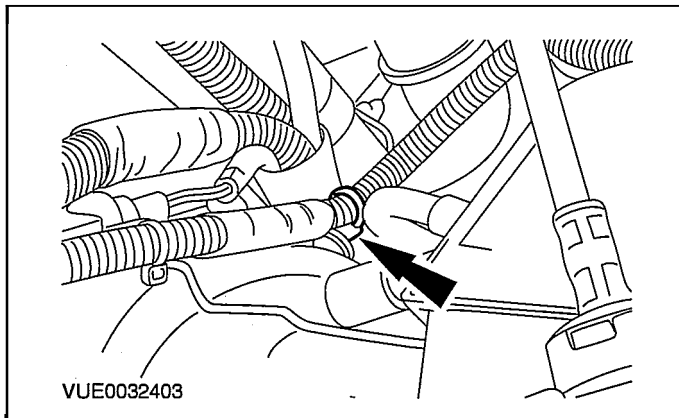
5. Remove the protective cap and disconnect the generator electrical connector.



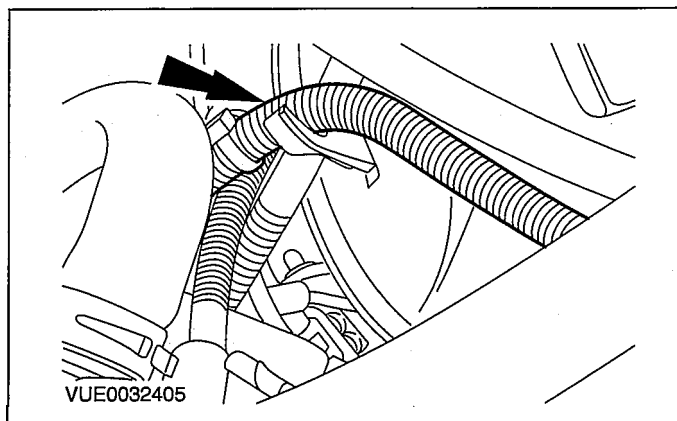
6. Raise and support the vehicle. For additional information, refer to Section **100-02**[Jacking and Lifting].

REMOVAL AND INSTALLATION

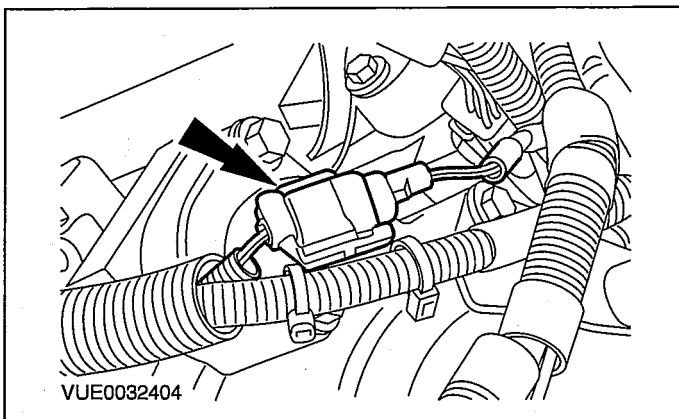
7. Detach the battery to starter motor solenoid cable from the retaining clip.



10. Detach the battery to starter motor solenoid cable from the retaining clip on the intake manifold.



8. Disconnect the starter motor solenoid cable electrical connector.

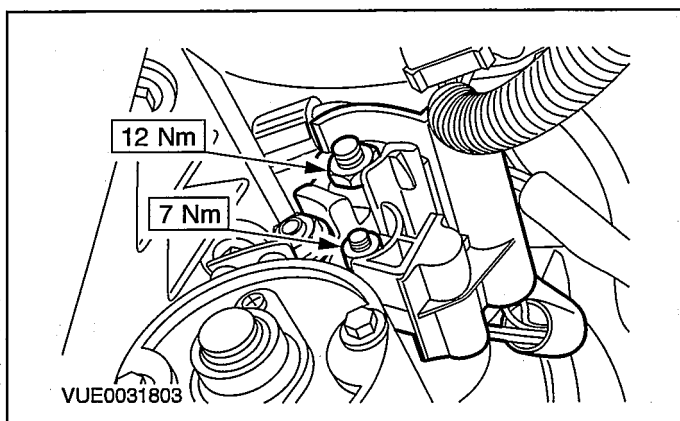


11. Remove the battery to starter motor solenoid cable.

Installation

- To install, reverse the removal procedure.

9. Disconnect the ignition switch to starter motor solenoid and battery to starter motor solenoid cables (oil filter shown removed for clarity).



REMOVAL AND INSTALLATION

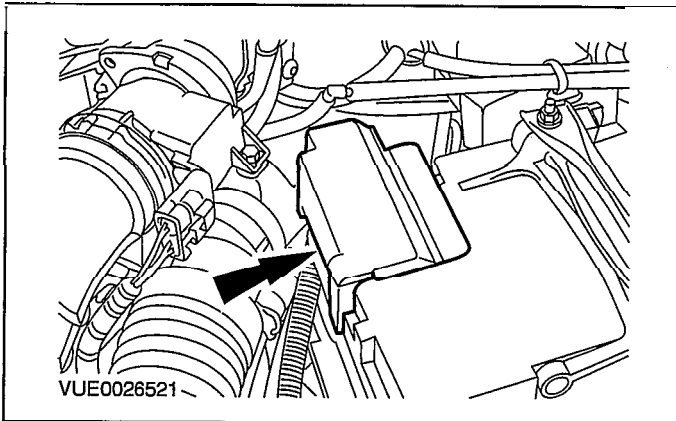
Battery Tray — 2.0L Duratec-HE (M14)(44 271 4)

Removal

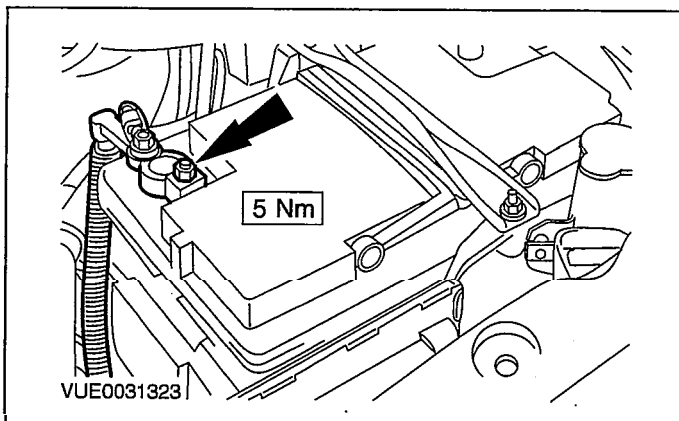
1. Disconnect the battery ground cable.

For additional information, refer to: Battery Disconnect (414-01 Battery, Mounting and Cables, General Procedures).

2. Open the battery positive terminal cover.



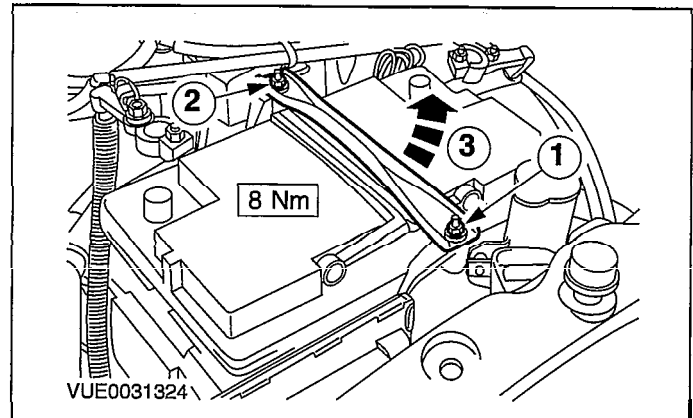
3. Disconnect the battery positive cable and position it to one side.



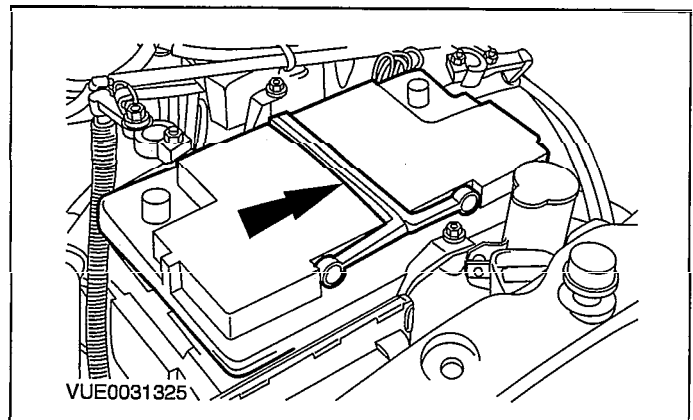
4. Detach the battery clamp from the battery tray and position it to one side.

1. Remove the battery clamp front retaining nut.
2. Remove the battery clamp rear retaining nut.

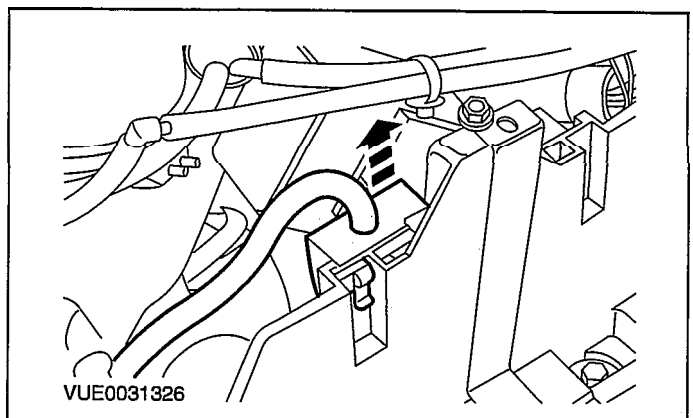
3. Unhook the battery clamp.



5. Remove the battery.

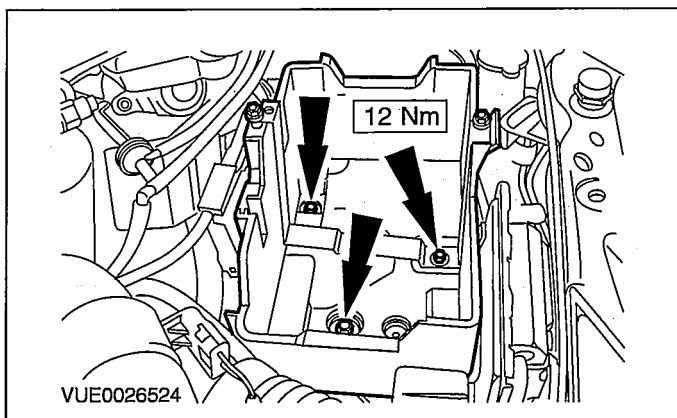


6. Detach the battery junction box (BJB) from the battery tray and position it to one side.



REMOVAL AND INSTALLATION

7. Remove the battery tray.

**Installation**

- ⚠ CAUTION:** If installing a new battery, only install the specified battery type.

For additional information, refer to:
Specifications (414-01 Battery, Mounting and Cables, Specifications).

1. **⚠ CAUTION:** When installing the battery clamp, make sure that the rear retaining nut is tightened first. Failure to follow this instruction may result in damage to the battery.

To install, reverse the removal procedure.

REMOVAL AND INSTALLATION**Battery Cables — 2.0L Duratec-HE (MI4)**

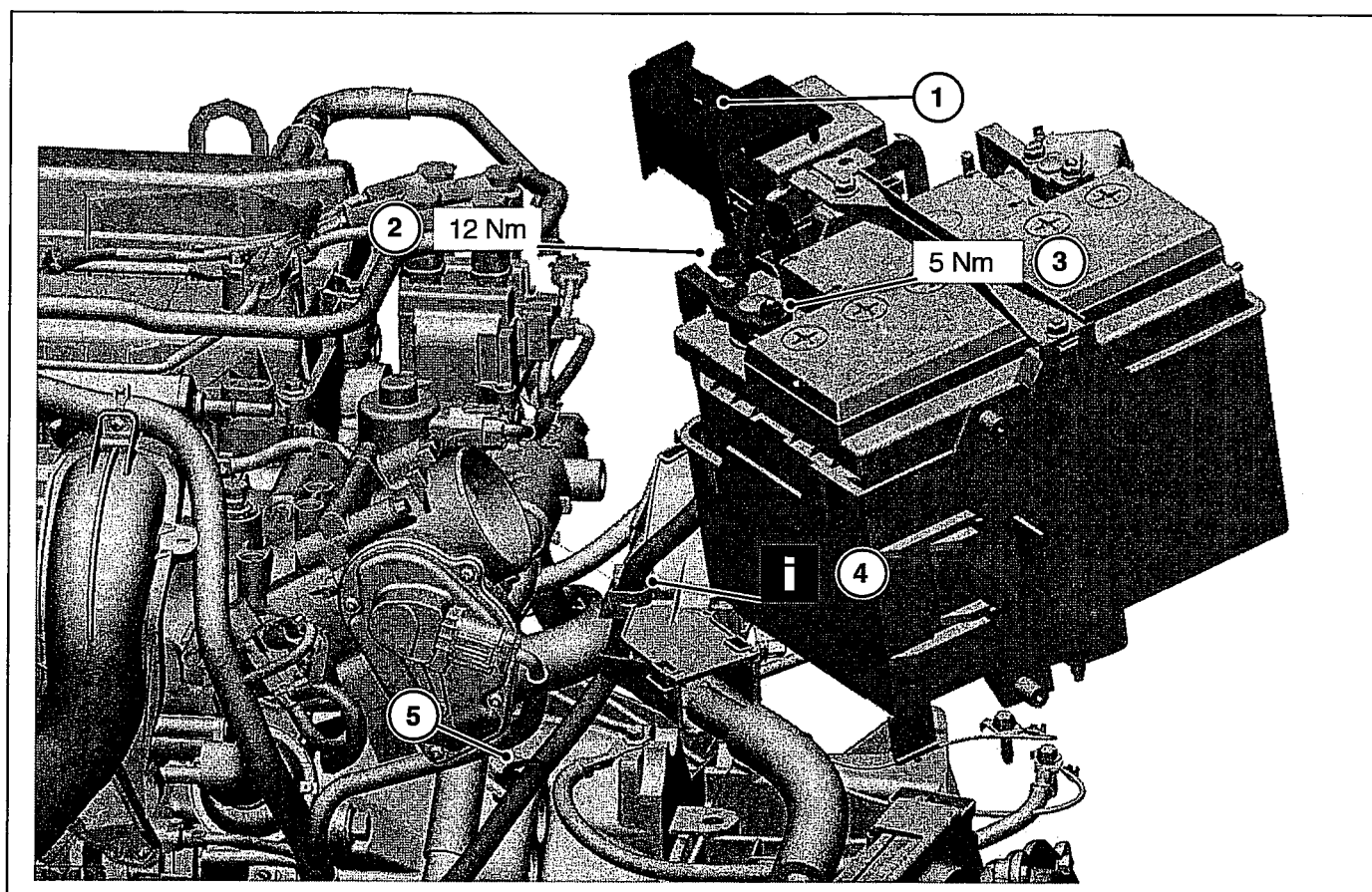
1. Disconnect the battery ground cable.

For additional information, refer to: Battery Disconnect (414-01 Battery, Mounting and Cables, General Procedures).

2. Remove the air cleaner.

For additional information, refer to: Air Cleaner - 2.0L Duratec-HE (MI4) (303-12 Intake Air Distribution and Filtering, Removal and Installation).

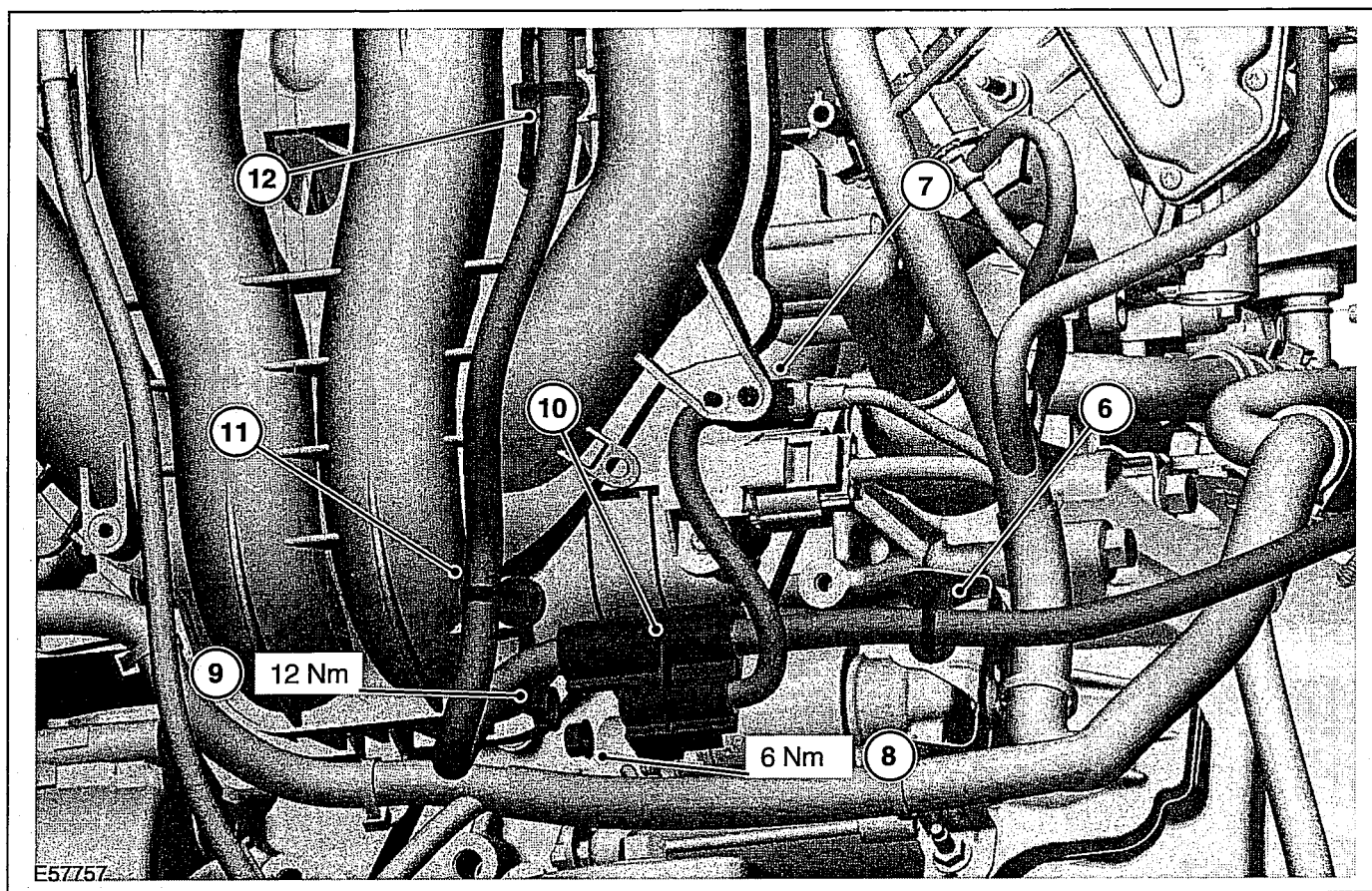
3. Remove the components in the order indicated in the following **illustration(s)** and **table(s)**.



Item	Description
1	Battery positive terminal clamp cover
2	Battery junction box (BJB) cable electrical connector to battery cable retaining nut

Item	Description
3	Battery positive terminal clamp
4	Wiring harness support See Removal Detail
5	Battery cable retaining clip

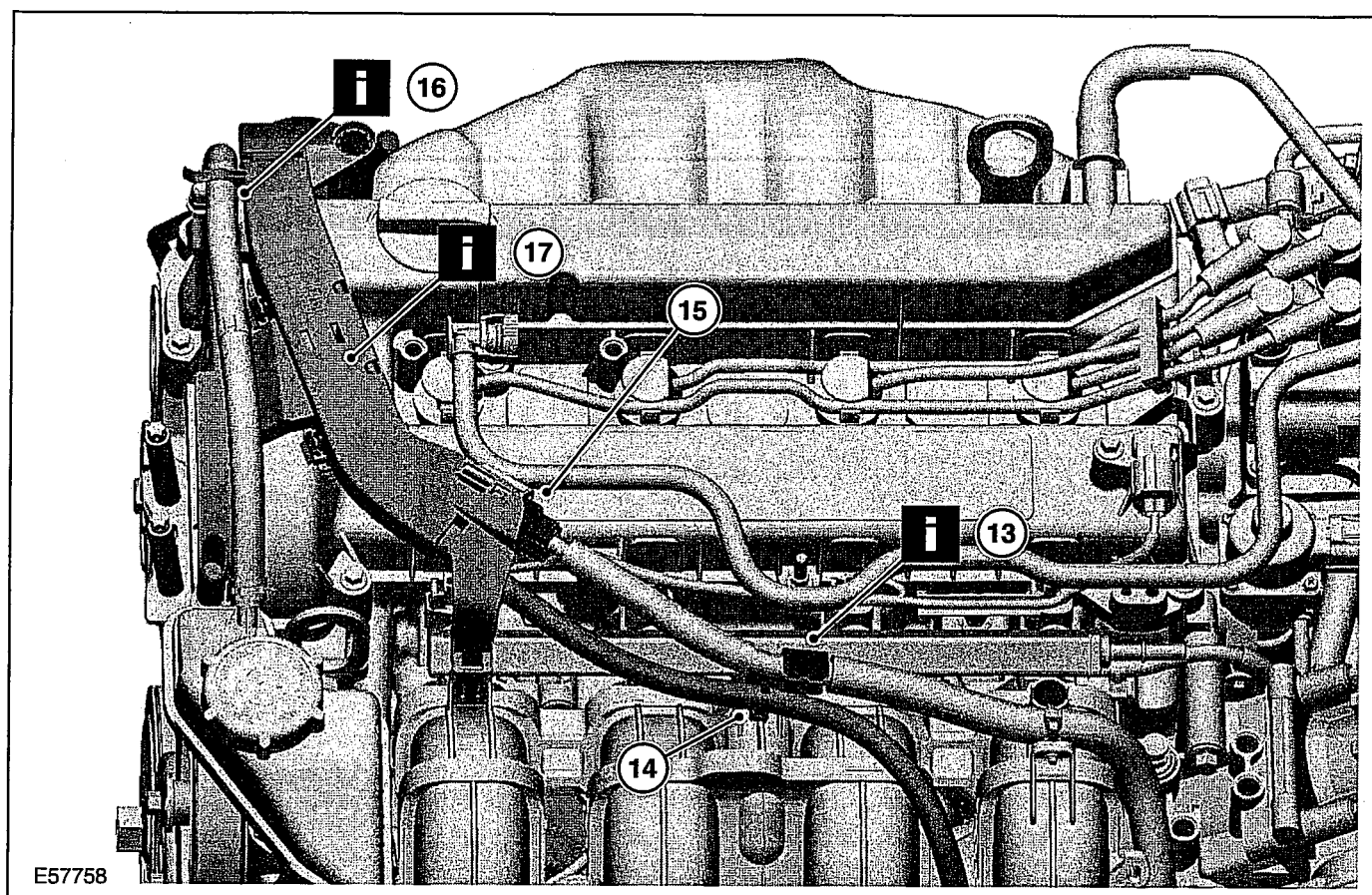
REMOVAL AND INSTALLATION



Item	Description
6	Battery cable retaining clip
7	Starter motor solenoid inline electrical connector
8	Starter motor solenoid cable electrical connector retaining nut

Item	Description
9	Starter motor battery positive cable electrical connector retaining nut
10	Starter motor solenoid electrical connector
11	Battery cable retaining clip
12	Battery cable retaining clip

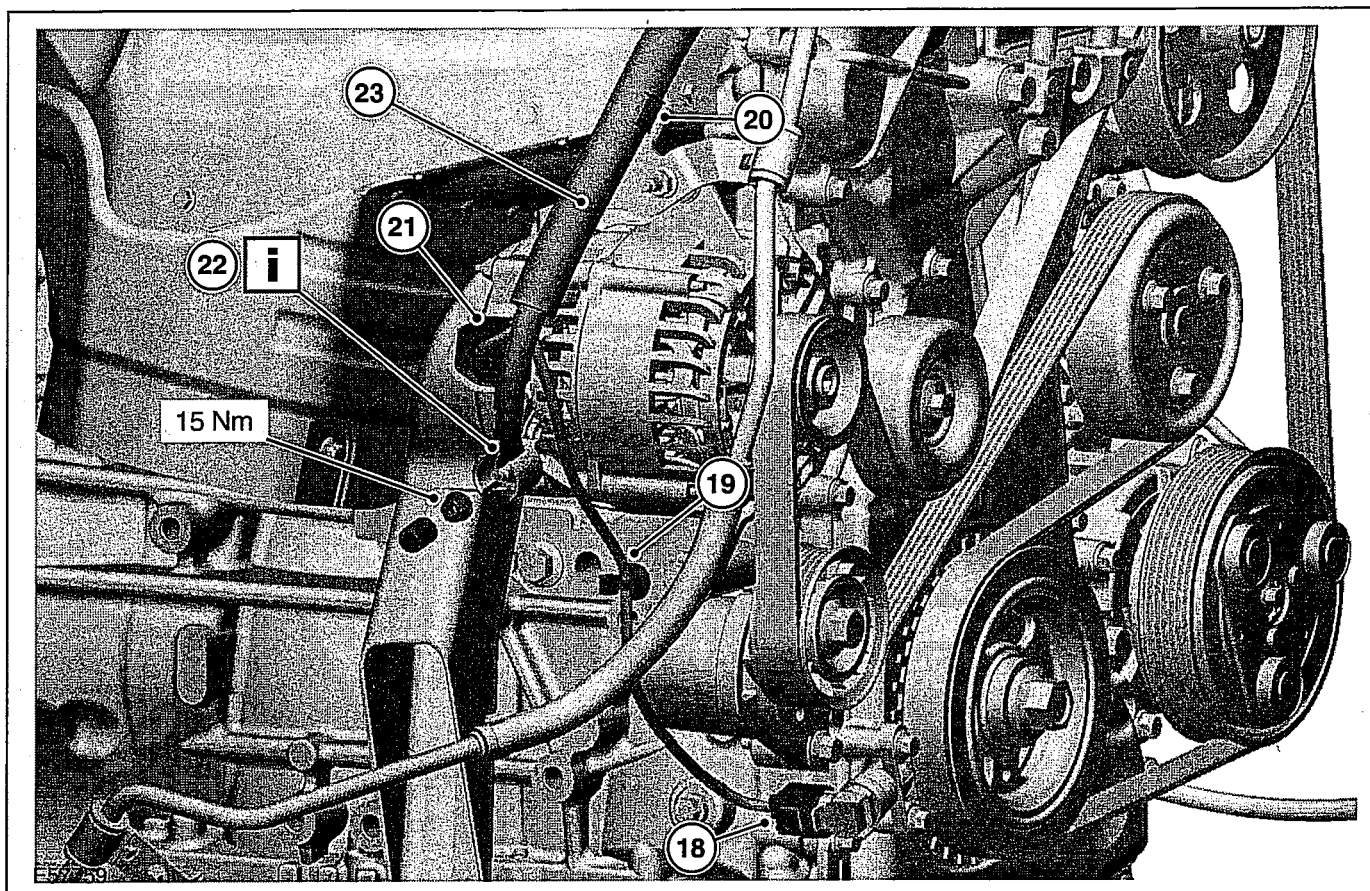
REMOVAL AND INSTALLATION



Item	Description
13	Engine wiring harness retaining clip See Removal Detail
14	Battery cable retaining clip
15	Engine wiring harness electrical connector

Item	Description
16	Power steering line retaining clip See Removal Detail
17	Battery cable inline fuse holder See Removal Detail

REMOVAL AND INSTALLATION



Item	Description
18	Crankshaft position (CKP) sensor electrical connector
19	CKP wiring harness retaining clip
20	Battery cable retaining clip
21	Generator electrical connector

Item	Description
22	Battery cable to generator electrical connector See Installation Detail
23	Battery cable

4. To install, reverse the removal procedure.

Removal Details

Item 4 Wiring harness support

1. Detach the battery cable from the wiring harness support.

Item 13 Engine wiring harness retaining clip

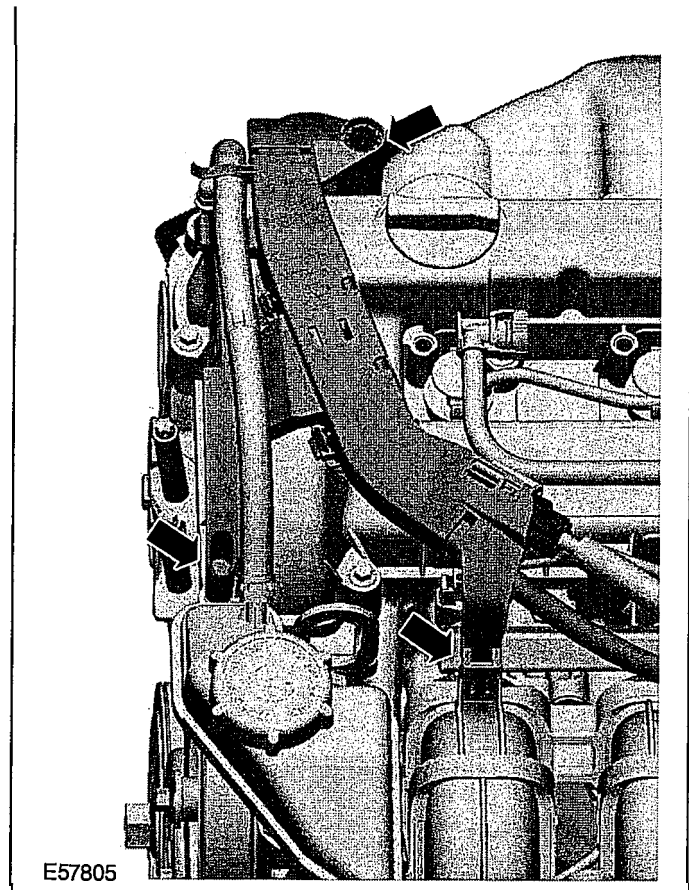
1. Detach the engine wiring harness from the battery cable retaining clip

Item 16 Power steering line retaining clip

1. Detach the power steering line from the battery cable inline fuse holder

REMOVAL AND INSTALLATION**Item 17** Battery cable inline fuse holder

1. Detach the battery cable inline fuse holder from the valve cover and intake manifold.

**Installation Details****Item 22** Battery cable to generator electrical connector

NOTE: The battery cable to generator electrical connector must follow the profile of the generator as closely as possible.

SECTION 414-02 Generator and Regulator

VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

PAGE

SPECIFICATIONS

Specifications.....	414-02-2
Torque Specifications - vehicles with 1.25L Duratec-16V (Sigma)/1.3L Duratec-8V (Rocam)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma) engines.....	414-02-2
Torque Specifications - vehicles with - 1.4L Duratorq-TDCi (DV) Diesel engine.....	414-02-2
Torque Specifications - vehicles with 1.6L Duratorq-TDCi (DV) Diesel engine.....	414-02-2
Torque Specifications - vehicles with 2.0L Duratec-HE (M14) engine.....	414-02-2

DIAGNOSIS AND TESTING

Generator.....	414-02-3
----------------	----------

REMOVAL AND INSTALLATION

Generator — 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)..... (31 414 0)	414-02-4
Generator — 2.0L Duratec-HE (M14).....	414-02-8

SPECIFICATIONS

Torque Specifications - **vehicles** with **1.25L Duratec-16V (Sigma)/1.3L Duratec-8V (Rocam)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)** engines

Description	Nm	lb-ft	lb-in
Generator retaining bolts	45	33	-
Generator electrical connector retaining nut	8	-	71

Torque Specifications - **vehicles** with - **1.4L Duratorq-TDCi (DV) Diesel** engine

Description	Nm	lb-ft	lb-in
Generator retaining bolts	45	33	-
Generator electrical connector retaining nut	15	11	-
Air conditioning (A/C) compressor retaining bolts	25	18	-
Accessory drive belt idler pulley retaining bolt	45	33	-

Torque Specifications - **vehicles** with **1.6L Duratorq-TDCi (DV) Diesel** engine

Description	Nm	lb-ft	lb-in
Generator retaining bolts	45	33	-
Generator electrical connector retaining nut	15	11	-
Air conditioning (A/C) compressor retaining bolts	25	18	
Accessory drive belt tensioner retaining bolts	25	18	
Turbocharger heatshield retaining bolts	3		27

Torque Specifications - **vehicles** with **2.0L Duratec-HE (M14)** engine

Description	Nm	lb-ft	lb-in
Generator retaining bolts	48	35	-
Generator electrical connector retaining nut	15	11	-

DIAGNOSIS AND TESTING**Generator**

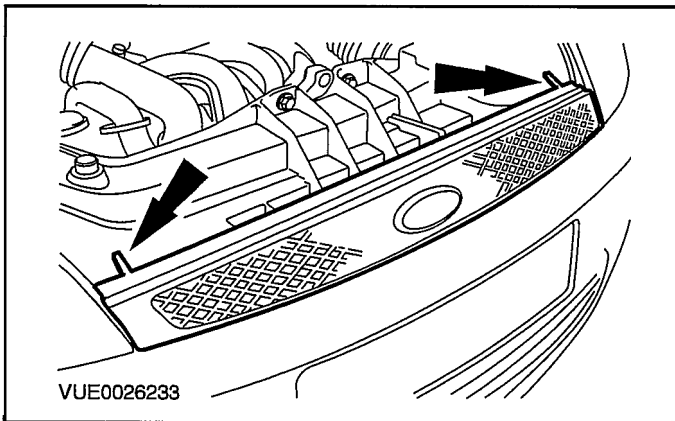
REFER to Section 414-00 [Charging System - General Information].

REMOVAL AND INSTALLATION

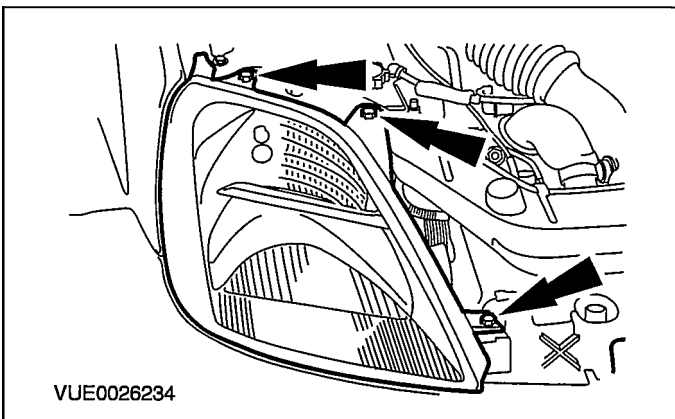
Generator — 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)(31 414 0)

Removal

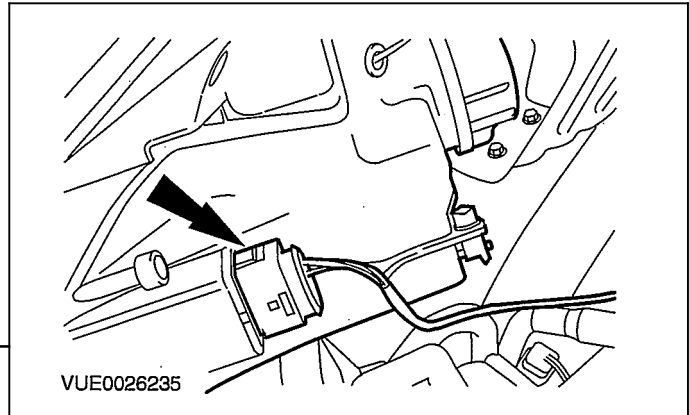
1. Disconnect the battery ground cable. For additional information, refer to Section **414-01** [Battery, Mounting and Cables].
2. Remove the accessory drive belt. For additional information, refer to Section **303-05** [Accessory Drive].
3. Lower the vehicle.
4. Remove the radiator grille.



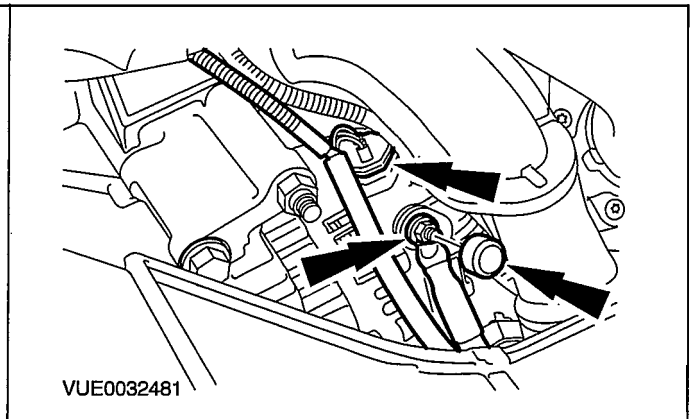
5. Detach the right-hand headlamp.



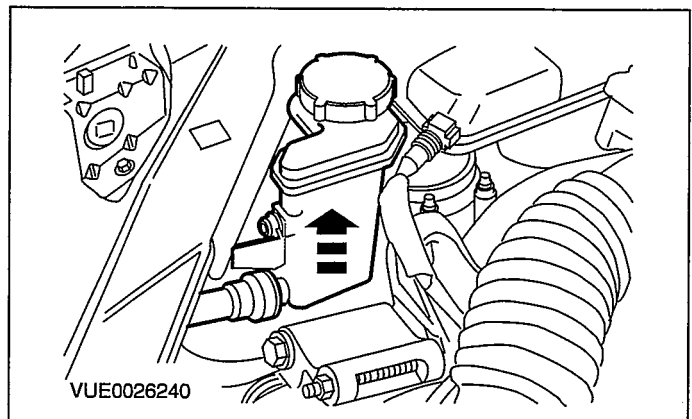
6. Disconnect the electrical connector and remove the headlamp.



7. Remove the protective cap and disconnect the generator electrical connectors.



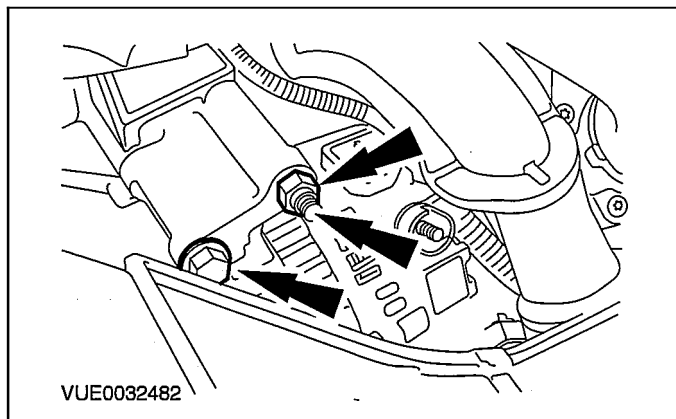
8. Detach the power steering reservoir and position it to one side.



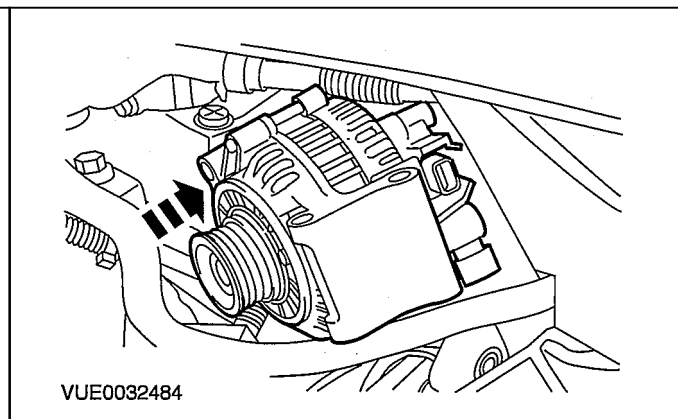
9. **NOTE:** It is not possible to fully remove the retaining bolt from the generator at this stage.

REMOVAL AND INSTALLATION

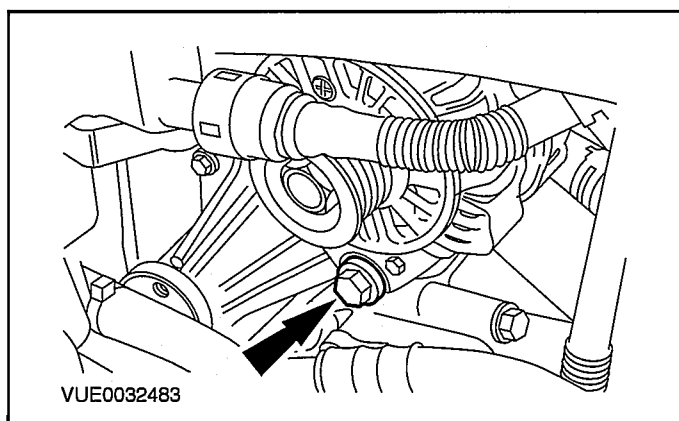
Remove the generator upper retaining nut, bolt and stud.



Install the generator through the **headlamp** aperture.

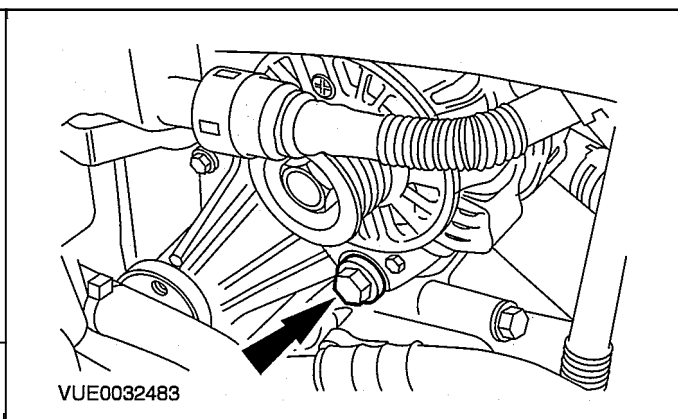


10. Remove the generator lower retaining bolt.

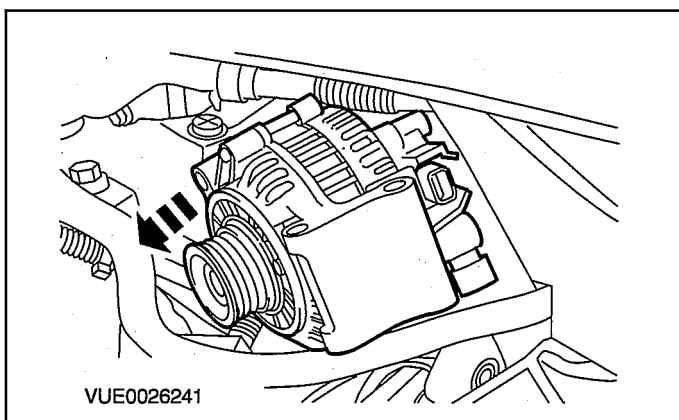


2. **NOTE:** Do not tighten the generator lower retaining bolt at this stage.

Install the generator lower retaining bolt.

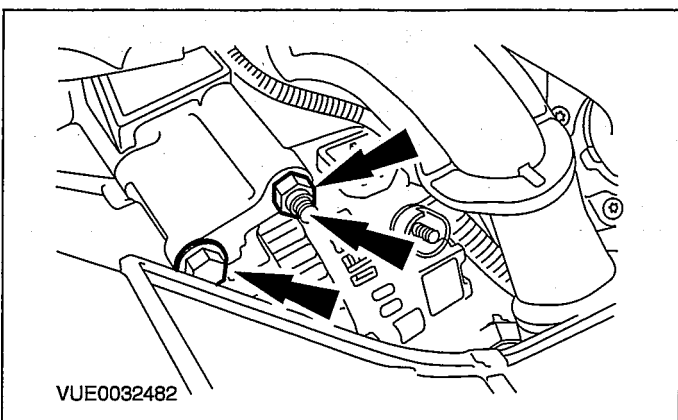


11. Remove the generator through the **headlamp** aperture.



3. **NOTE:** Do not tighten the generator upper retaining nut and bolt at this stage.

Install the generator upper retaining nut, bolt and stud.

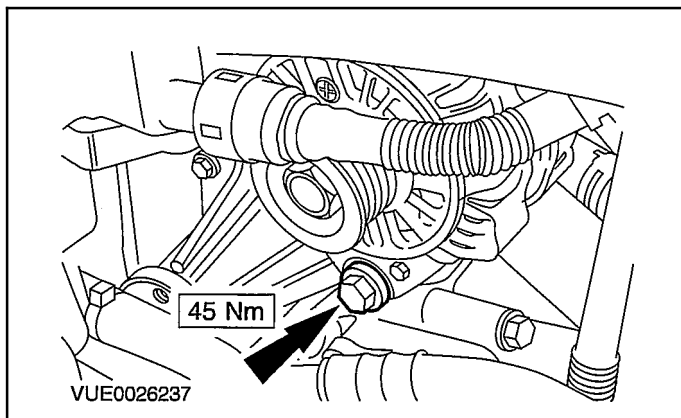


Installation

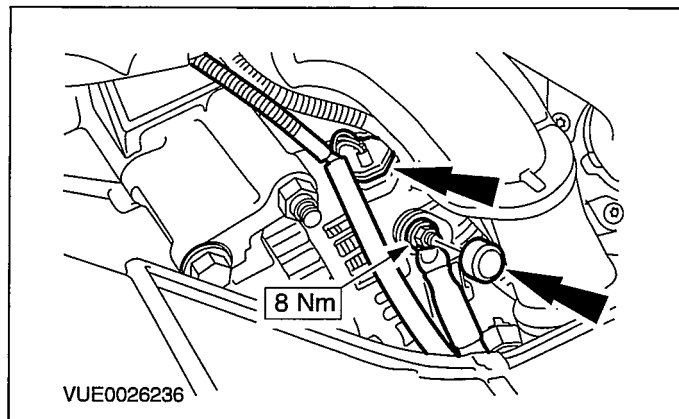
■ **NOTE:** Install the generator upper retaining bolt into the generator prior to installing the generator.

REMOVAL AND INSTALLATION

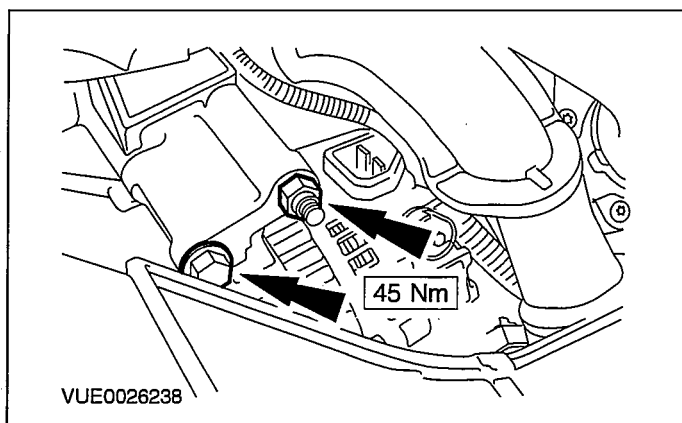
4. Tighten the generator lower retaining bolt.



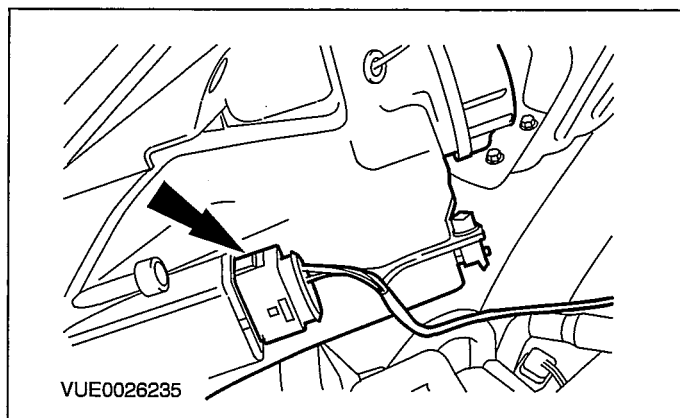
7. Connect the generator electrical connectors and install the protective cap.



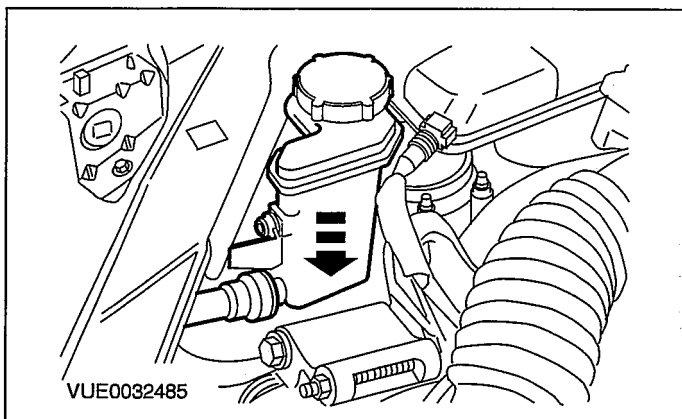
5. Tighten the generator upper retaining nut and bolt.



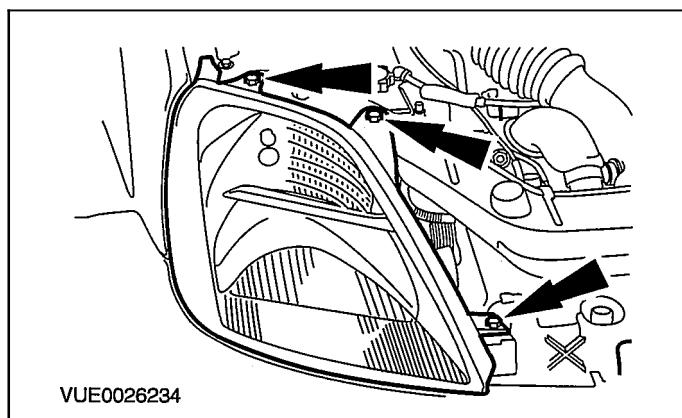
8. Connect the electrical connector and install the headlamp.



6. Install the power steering reservoir.

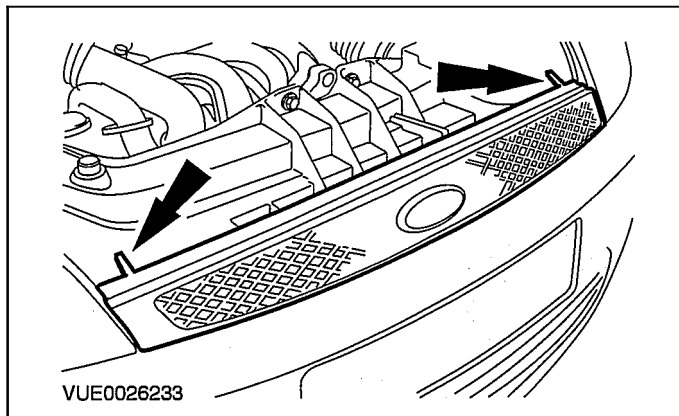


9. Install the right-hand headlamp.



REMOVAL AND INSTALLATION

- 10. Install the radiator grille.**



- 11. Raise and support the vehicle.**
- 12. Install a new accessory drive belt. For additional information, refer to Section 303-05 [Accessory Drive].**
- 13. Connect the battery ground cable. For additional information, refer to Section 414-01 [Battery, Mounting and Cables].**

REMOVAL AND INSTALLATION

Generator — 2.0L Duratec-HE (MI4)

Materials

Name	Specification
------	---------------

Grease	SA-M1C9107-A
--------	--------------

1. Disconnect the battery ground cable.

For additional information, refer to: Battery Disconnect (414-01 Battery, Mounting and Cables, General Procedures).

2. Remove the air cleaner.

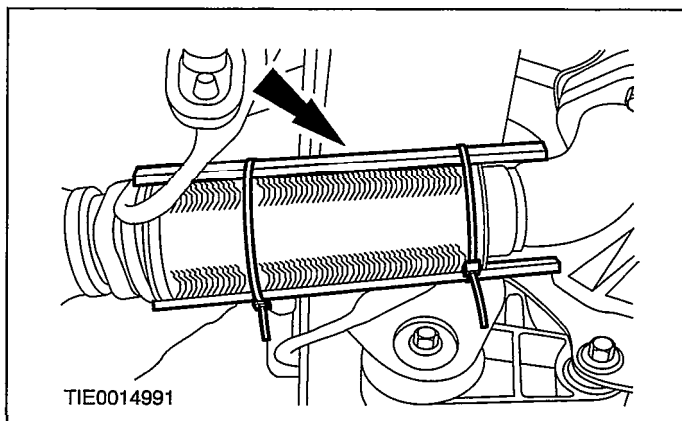
For additional information, refer to: Air Cleaner - 2.0L Duratec-HE (MI4) (303-12 Intake Air Distribution and Filtering, Removal and Installation).

3. Remove the **accessory** drive belt.

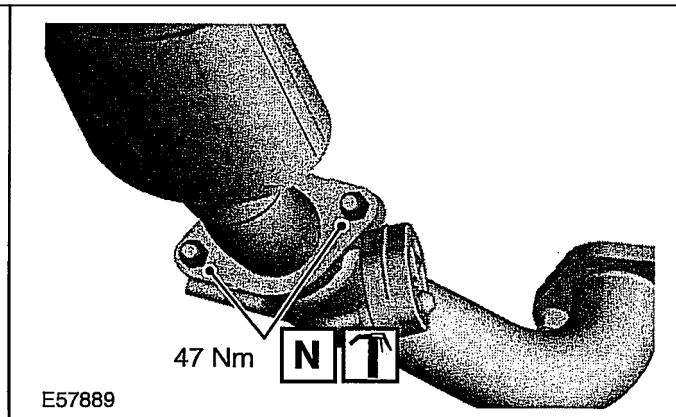
For additional information, refer to: Accessory Drive Belt - 2.0L Duratec-HE (MI4) (303-05 Accessory Drive, Removal and Installation).

4. **CAUTION:** Over bending of the exhaust flexible pipe may cause damage resulting in failure.

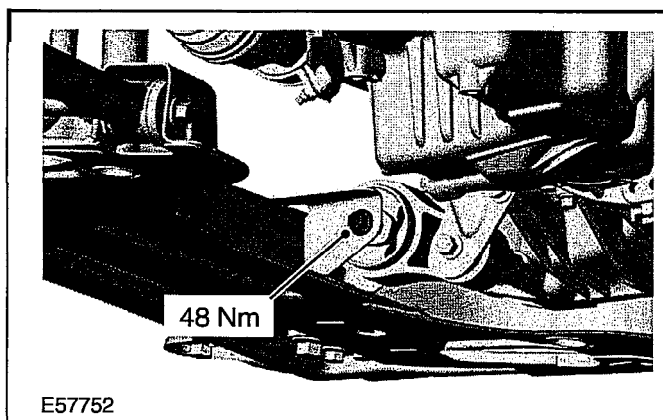
Support the exhaust flexible pipe with a support wrap or splint.

5. Disconnect the catalytic converter from the exhaust flexible **pipe**.

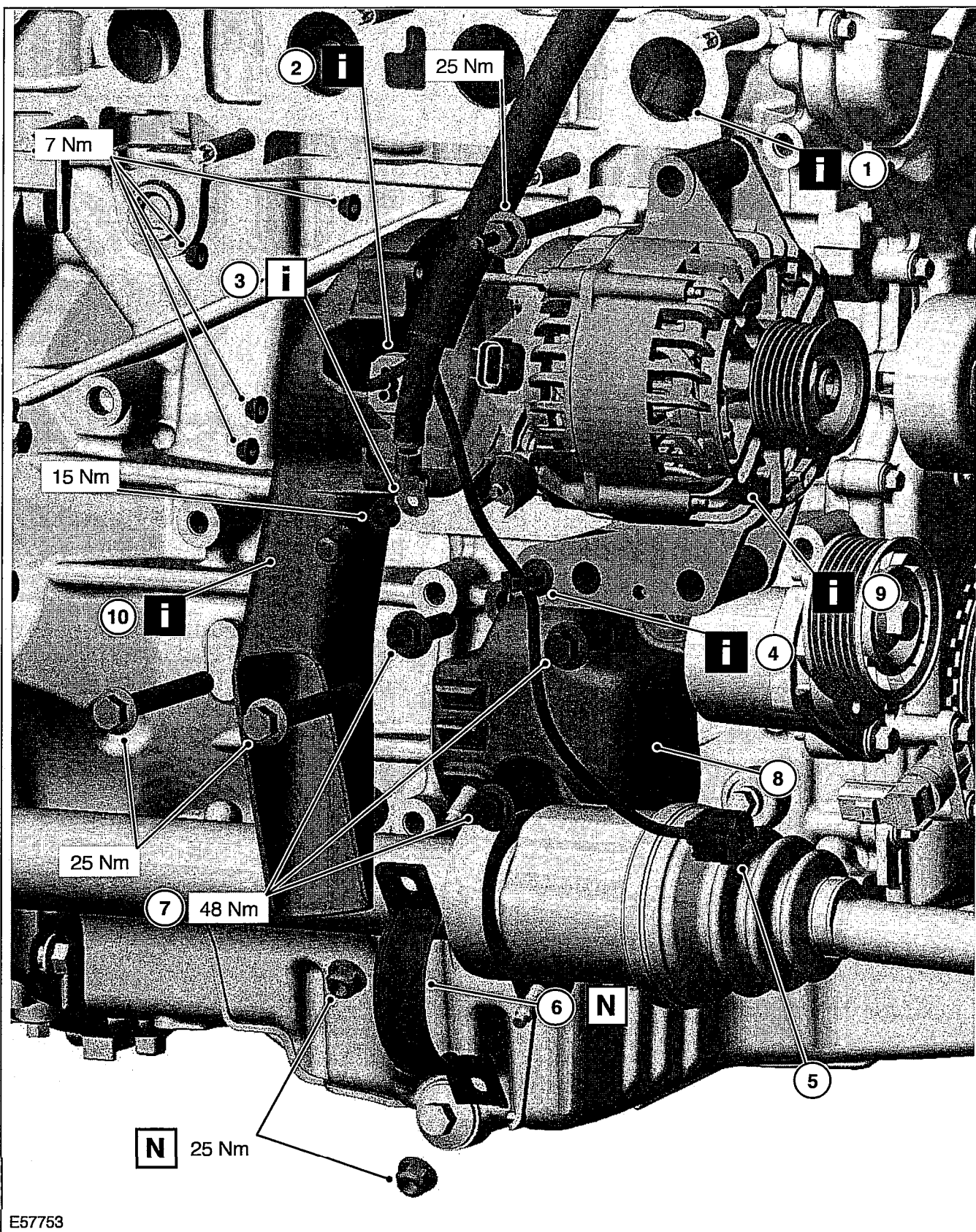
- Discard the gasket.



6. Remove the engine support insulator retaining bolt.

7. Remove the components in the order indicated in the following **illustration(s)** and **table(s)**.

REMOVAL AND INSTALLATION



E57753

Item	Description
1	Generator wiring harness retaining clip See Removal Detail
2	Generator electrical connector

Item	Description
	See Removal Detail
3	Battery cable to generator electrical connector

REMOVAL AND INSTALLATION

	Description
	See Installation Detail
4	Crankshaft position (CKP) sensor wiring harness retaining clip See Removal Detail
5	CKP sensor electrical connector
6	Intermediate shaft center bearing cap
7	Intermediate shaft center bearing cap retaining bracket retaining bolts

Item	Description
	Intermediate shaft center bearing cap retaining bracket
9	Generator See Removal Detail
10	Generator cooling duct See Removal Detail

NOTE: Install a new catalytic converter to exhaust flexible pipe gasket.

8. To install, reverse the removal procedure.

Removal Details

Item 1 Generator wiring harness retaining clip

1. Detach the generator wiring harness from the retaining clip.

Item 2 Generator electrical connector

1. Disconnect the generator electrical connector (generator cooling duct shown removed for clarity).
 - Release the locking tang.

Item 4 Crankshaft position (CKP) sensor wiring harness retaining clip

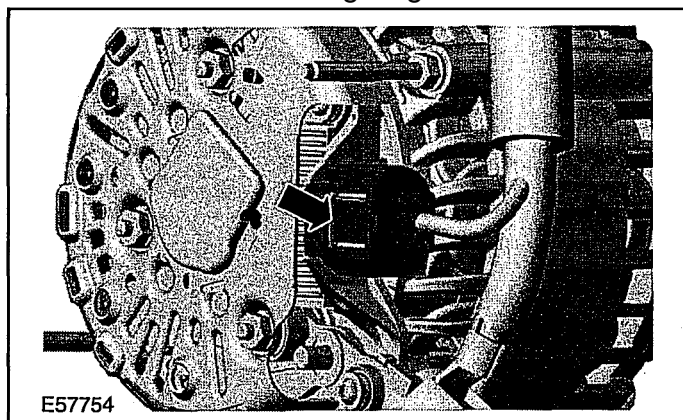
1. Detach the **CKP** sensor wiring harness retaining clip from the generator.

Item 9 Generator

- _With the aid of another technician, push the engine towards the radiator and remove the generator and generator cooling duct.

Item 10 Generator cooling duct

- _Remove the generator cooling duct from the generator.



Installation Details

Item 3 Battery cable to generator electrical connector

NOTE: The battery cable to generator electrical connector must follow the profile of the generator as closely as possible.

SECTION 415-00 Information and Entertainment System - General Information

VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

PAGE

DIAGNOSIS AND TESTING

Audio System — Vehicles Built Up To: 10/2005.....	415-00-2
Inspection and Verification.....	415-00-2
Self-Diagnostic Mode.....	415-00-8
Symptom Chart.....	415-00-9
Pinpoint Tests.....	415-00-10
Audio System — Vehicles Built From: 10/2005.....	415-00-20
Inspection and Verification.....	415-00-20
Self-Diagnostic Mode - 5000C, 6000CD, 6006CDC Audio Units.....	415-00-20
Self-Diagnostic Mode - 1500RDS Audio Unit.....	415-00-20
Diagnostic Trouble Code (DTC) Index Chart.....	415-00-21
Symptom Chart.....	415-00-23
Pinpoint Tests.....	415-00-24

DIAGNOSIS AND TESTING

Audio System — Vehicles Built Up To: 1012005

Refer to Wiring Diagrams Section 415-01, for schematic and connector information.

Refer to Wiring Diagrams Section 415-03, for schematic and connector information.

Refer to Wiring Diagrams Section 415-07, for schematic and connector information.

Inspection and Verification

NOTE: If the code is entered incorrectly 3 times, the system will lock out. The component can only be unlocked by the manufacturer.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> - Audio unit - Cassette player - Compact disc (CD) player - Digital Versatile Disc (DVD) Player - Antenna mast or base 	<ul style="list-style-type: none"> - Fuse(s) - Wiring harness - Electrical connector(s) - Speaker(s) - Audio unit - Cassette player - CD player - DVD Player - Antenna cable - Audio control switch (if equipped) - Central junction box (CJB)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If an obvious cause is not found, codes may be shown in the audio unit display. Check the audio unit display for the following Error Codes:
 - for vehicles with 6006E or 9006 audio unit refer to the CD Error Codes - vehicles with Vehicles with 6006E or 9006 Audio Unit
 - for vehicles with 4500 audio unit refer to the CD Error Codes - vehicles with 4500 Audio Unit
5. If no error codes are displayed on the audio unit refer to the Self-Diagnostic Mode.

CD Error Codes Vehicles with 6006E Audio Unit

Error Codes

Error Code	Error Description	Error Rectification
E1	Communications Error	Install a new audio unit. REFER to: Audio Unit - Vehicles Built Up To: 10/2005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.

DIAGNOSIS AND TESTING

E2	Overtemp Error	<p>The Audio unit is too hot, it will not work until it has cooled down. Check the heater duct(s) are not bleeding hot air on to the audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>If the concern persists, INSTALL a new audio unit. TEST the system for normal operation.</p>
E3	Mechanical Error	<p>PRESS and HOLD the LOAD and EJECT buttons simultaneously. WAIT until the audio unit has checked through the CDs currently in the unit. TEST the system for normal operation. If the concern persists, DISCONNECT the audio unit power connector. WAIT 20 seconds and then CONNECT the audio unit power connector. WAIT until the audio unit has checked through the CDs currently in the unit. TEST the system for normal operation. If the error code is still displayed, INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
E4	Focus Error	<p>CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed, INSERT a different CD. If the error code is still displayed. INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

E5	Overcurrent Error	Install a new audio unit. REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.
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CD Error Codes - vehicles with 4500 Audio Unit**Error Codes**

Error Code	Error Description	Error Rectification
E-2B	CD Read Error	CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.
E-2C	Jump Error	CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.

DIAGNOSIS AND TESTING

E-2D	HF Detector Error	<p>DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. WAIT until the audio unit has checked through the CDs currently in the unit. TEST the system for normal operation. If the error code is still displayed, INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
E-2E	CD Decoder Hardware Error	<p>DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. WAIT until the audio unit has checked through the CDs currently in the unit. TEST the system for normal operation. If the error code is still displayed, INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 10/2005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
E-8x	Load/Eject Error	<p>DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. WAIT until the audio unit has checked through the CDs currently in the unit. TEST the system for normal operation. If the error code is still displayed, INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

E-23	Sledge Error	<p>CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 10/2005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
E-24	Focus Error	<p>CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 10/2005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
E-25	Spindle Motor Error	<p>CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 10/2005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>

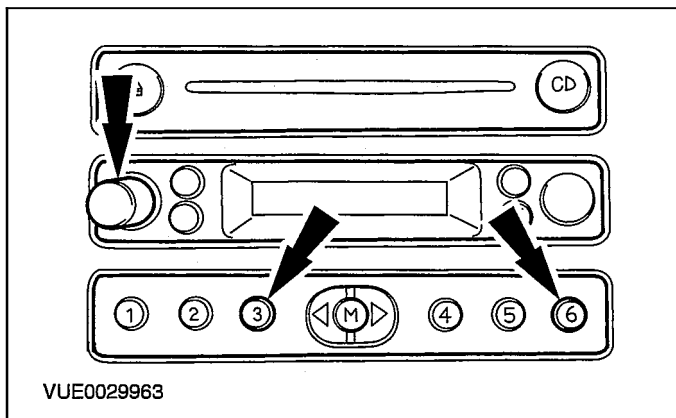
DIAGNOSIS AND TESTING

E-26	Radial Error	<p>CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
E-27	PLL Lock Error	<p>CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
E-28	Subcode Timeout Error	<p>CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

E-29	Subcode Not Found Error	<p>CD is upside down or dirty. Clean the CD and try it again, if the error code is still displayed. DISCONNECT the audio unit power connector. WAIT 30 seconds and then CONNECT the audio unit power connector. If the error code is still displayed. INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 10/2005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
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Self-Diagnostic Mode



1. To enter the audio unit Self-Diagnostic Mode, switch the audio unit ON. Press the preset buttons 3 and 6 together for at least 2 seconds.
2. Release the preset buttons 3 and 6 and the audio unit will enter the Self-Diagnostic Mode. On entering the Self-Diagnostic Mode, the audio unit will automatically search the FM band to carry out the waveband check, starting at the lowest frequency until it finds a signal.
3. To exit the audio unit Self-Diagnostic Mode, press the preset button 6.

Self-Diagnostic Mode - Model 2500

Test	Syntax Displayed	Description
1. FM waveband check.	Numeric value (of station found) or Er2 if no signal received.	Tests the signal from the antenna cable.
2. Volume.	No display shown. Audio unit volume preset at 15.	Tests the traffic announcement preset volume and volume control.
3. Test speaker circuit.	RF.	Tests the right-hand front speaker circuit.
4. Test speaker circuit.	LF.	Tests the left-hand front speaker circuit.
End of the audio unit Self-Diagnostic Mode.	END.	Displayed until the audio unit preset button 6 is pressed or Self-Diagnostic Mode times out.

Self-Diagnostic Mode - Models 3500,4500 and 6006

Test	Syntax Displayed	Description
1. FM waveband check.	Numeric value (of station found) or NOT FOUND if no signal received.	Tests the signal from the antenna cable.

DIAGNOSIS AND TESTING

Test	Syntax Displayed	Description
2. Volume.	No display shown. Audio unit volume preset at 15.	Tests the traffic announcement preset volume and volume control.
3. Test speaker circuit.	4CH RF for four channel system 2CH RF for two channel system.	Tests the right-hand front speaker circuit.
4. Test speaker circuit.	4CH LF for four channel system 2CH LF for two channel system.	Tests the left-hand front speaker circuit.
5. Test speaker circuit.	4CH RR.	Tests the right-hand rear speaker circuit.
6. Test speaker circuit.	4CH LR.	Test the left-hand rear speaker circuit.
7. Test compact disc auto-changer circuit (if equipped).	<ul style="list-style-type: none"> CDDJ OK if communications are achieved. NO CDDJ if no communications are achieved. 	Tests the compact disc auto-changer circuit.
End of the audio unit Self-Diagnostic Mode.	END.	Displayed until the audio unit preset button 6 is pressed or Self-Diagnostic Mode times out.

4. If the concern is still evident after the self-diagnostic mode, refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The audio unit is inoperative/does not operate correctly 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test A.
<ul style="list-style-type: none"> The display is blank - radio and cassette player or CD player operate 	<ul style="list-style-type: none"> Audio unit. 	<ul style="list-style-type: none"> INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.
<ul style="list-style-type: none"> Poor reception 	<ul style="list-style-type: none"> Antenna. Antenna cable. Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
<ul style="list-style-type: none"> Poor quality/distorted sound from one or more speakers (not all speakers) 	<ul style="list-style-type: none"> Speaker(s). Circuit(s). Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test C.
<ul style="list-style-type: none"> No sound from all speakers 	<ul style="list-style-type: none"> Audio unit. Circuit(s). Speaker(s). 	<ul style="list-style-type: none"> GO to Pinpoint Test D.

DIAGNOSIS AND TESTING

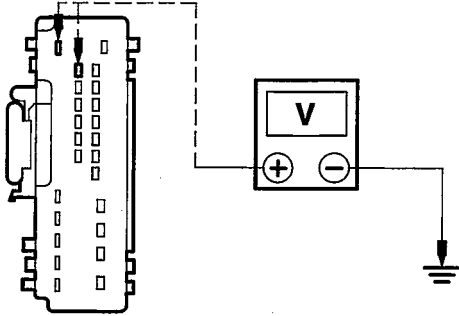
Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The CD player is inoperative/does not operate correctly 	<ul style="list-style-type: none"> Audio unit. 	<ul style="list-style-type: none"> INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.
<ul style="list-style-type: none"> No sound from one or more of the speakers (not all speakers) 	<ul style="list-style-type: none"> Circuit(s). Speaker(s). Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test E.
<ul style="list-style-type: none"> The audio remote control is inoperative/does not operate correctly 	<ul style="list-style-type: none"> Circuit(s). Audio remote control. Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test F.
<ul style="list-style-type: none"> The digital versatile disc (DVD) player is inoperative/does not operate correctly 	<ul style="list-style-type: none"> DVD player Circuit(s) Fuse(s) 	<ul style="list-style-type: none"> GO to Pinpoint Test G

Pinpoint Tests

NOTE: Use a digital multimeter for all electrical measurements.

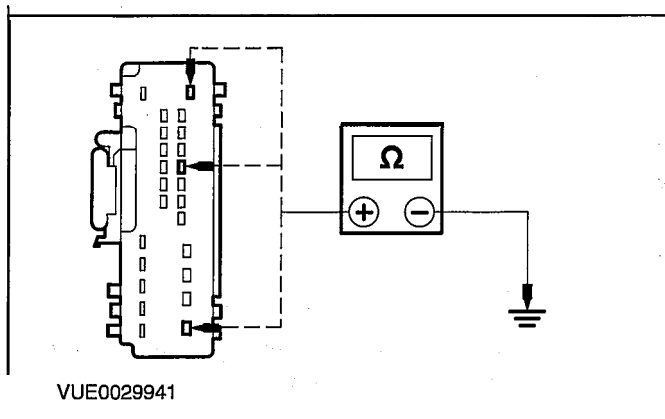
PINPOINT TEST A : THE AUDIO UNIT IS **INOPERATIVE/DOES NOT OPERATE CORRECTLY**
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

A1: CHECK AUDIO UNIT FOR POWER	
 <p>VUE0029940</p>	<p>1 Disconnect Audio Unit C344.</p>
	<p>2 Ignition switch in position II.</p>
	<p>3 Measure the voltage between the audio unit C344 pin 1, circuit 29-MD15 (OGIBK), harness side and ground; and between the audio unit C344 pin 2, circuit 75-MD15 (YE/GN), harness side and ground.</p> <ul style="list-style-type: none"> Are the voltages greater than 10 volts? → Yes GO to A2. → No REPAIR circuit 29-MD15 (OGIBK) or circuit 75-MD15 (YEIGN). TEST the system for normal operation.
A2: CHECK AUDIO UNIT FOR GROUND	
	<p><input type="checkbox"/> Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the audio unit C344 pin 13, circuit 91-MD15 (BWGN), harness side and ground; and between the audio unit C344 pin 17, circuit 91-MD34 (BK/YE), harness side and ground; and between the audio unit C344 pin 24, circuit 91-MD15A (BWGN), harness and ground.

- Are the resistances less than 1 ohm?

→ Yes

INSTALL a new audio unit.

REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).

TEST the system for normal operation.

→ No

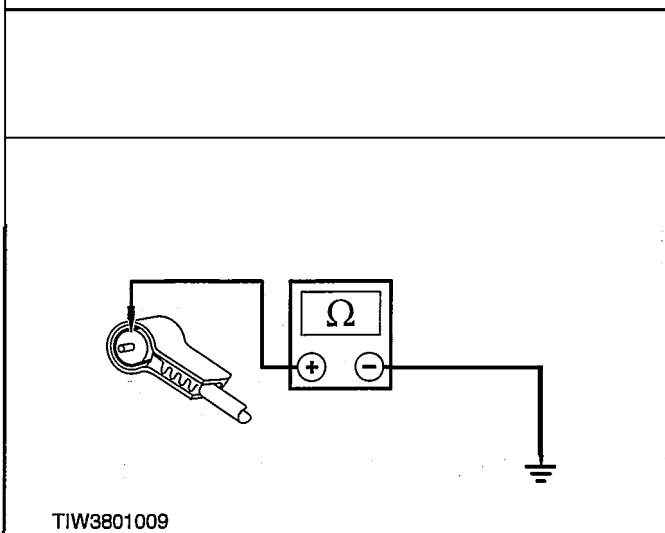
REPAIR circuit 91-MD15 (BWGN) or 91-MD34 (BK/YE) or 91-MD15A (BWGN). TEST the system for normal operation.

PINPOINT TEST B : POOR RECEPTION

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B1: CHECK THE ANTENNA CABLE SHIELD



- 1 Ignition switch in position 0.

- 2 Disconnect Audio Unit Antenna Connector.

- 3 Measure the resistance between the antenna cable ground connector (shield) and ground.

- Is the resistance less than 1 ohm?

→ Yes

GO to B2.

→ No

CLEAN and TIGHTEN the antenna mast base connection to the body. If the concern persists, INSTALL a new antenna cable.

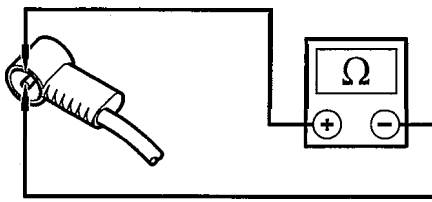
REFER to: Antenna Cable (415-02 Antenna, Removal and Installation).

TEST the system for normal operation.

B2: CHECK THE ANTENNA CENTER CONDUCTOR FOR OPEN

- 1 Remove the antenna mast.

DIAGNOSIS AND TESTING

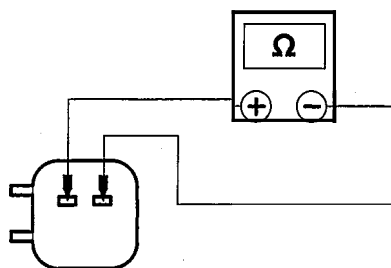
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>TIW3801010</p>	<p><input type="checkbox"/> 2 Measure the resistance of the center conductor, between the ends of the antenna cable.</p> <ul style="list-style-type: none"> Is the resistance less than 1 ohm? <p>→ Yes GO to B3.</p> <p>→ No INSTALL a new antenna cable.</p> <p>REFER to: Antenna Cable (415-02 Antenna, Removal and Installation). TEST the system for normal operation.</p>
B3: CHECK ANTENNA CABLE FOR SHORT	
 <p>V3801158</p>	<p><input type="checkbox"/> Measure the resistance between the antenna center conductor and the antenna ground (shield).</p> <ul style="list-style-type: none"> Is the resistance greater than 10,000 ohms (open circuit)? <p>→ Yes CLEAN and TIGHTEN the ground connections at the base of the antenna and battery ground cable to body. If the concern persists, INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 10/2005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.</p> <p>→ No INSTALL a new antenna cable.</p> <p>REFER to: Antenna Cable (415-02 Antenna, Removal and Installation). TEST the system for normal operation.</p>

PINPOINT TEST C : POOR QUALITY/DISTORTED SOUND FROM ONE OR MORE SPEAKERS (NOT ALL SPEAKERS)

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
CI: CHECK THE SPEAKER RESISTANCE	
	<p><input type="checkbox"/> Disconnect Inoperative Speaker.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VUE0029964

DETAILS/RESULTS/ACTIONS

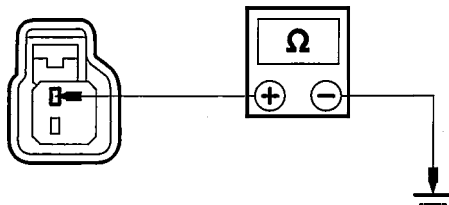
- 2 Measure the resistance between the inoperative speaker pin 1 and pin 2, component side.

• Is the resistance approximately 4 ohms?

→ **Yes**
GO to C2.

→ **No**
INSTALL a new speaker. TEST the system for normal operation.

C2: CHECK SPEAKER INPUT FOR SHORT TO GROUND



VUE0029843

- 1 Disconnect Audio Unit C344.

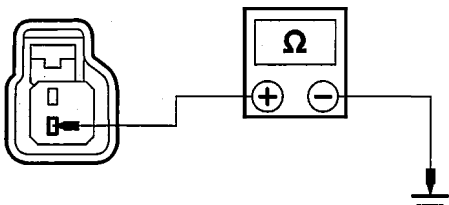
- Measure the resistance between the inoperative speaker connector pin 1, harness side and ground.

• Is the resistance greater than 10,000 ohms (open circuit)?

→ **Yes**
GO to C3.

→ **No**
REPAIR the inoperative speaker input circuit.
TEST the system for normal operation.

C3: CHECK SPEAKER RETURN FOR SHORT TO GROUND



VUE0029844

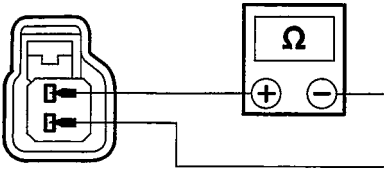
- 1 Measure the resistance between the inoperative speaker connector pin 2, harness side and ground.

• Is the resistance greater than 10,000 ohms (open circuit)?

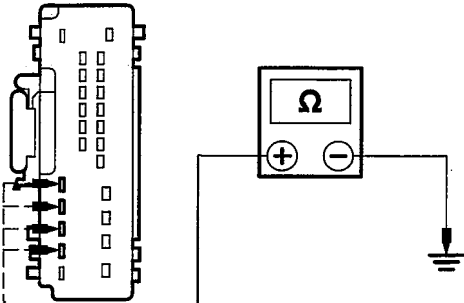
→ **Yes**
GO to C4.

→ **No**
REPAIR the inoperative speaker input circuit.
TEST the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C4: CHECK SPEAKER CIRCUIT FOR SHORT	
 <p>VUE0029842</p>	<p>1 Measure the resistance between the inoperative speaker connector pin 1, harness side and pin 2, harness side.</p> <ul style="list-style-type: none"> Is the resistance greater than 10,000 ohms (open circuit)? <p>→ Yes INSTALL a new speaker. TEST the system for normal operation. If the concern persists, INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.</p> <p>→ No REPAIR the circuit(s). TEST the system for normal operation.</p>

PINPOINT TEST D : NO SOUND FROM ALL SPEAKERS

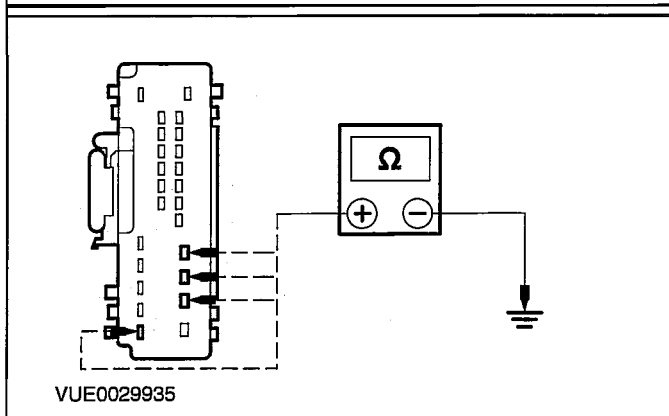
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D1: CHECK SPEAKER INPUT CIRCUIT FOR SHORT TO GROUND	
 <p>VUE0029936</p>	<p>1 Ignition switch in position 0.</p>
	<p>2 Disconnect Audio Unit C344.</p>
	<p>3 Measure the resistance between the following audio unit connector pins and ground:</p> <ul style="list-style-type: none"> (Front left speaker) C344 pin 8, circuit 8-MD10 (WH/BK), harness side and ground. (Rear left speaker) C344 pin 9, circuit 8-MD11 (WH/VT), harness side and ground. (Front right speaker) C344 pin 11, circuit 8-MD17 (WH/RD), harness side and ground. (Rear right speaker) C344 pin 10, circuit 8-MD18 (WH), harness side and ground. <ul style="list-style-type: none"> Are the resistances greater than 10,000 ohms (open circuit)? <p>→ Yes GO to D2.</p> <p>→ No REPAIR the circuit(s). TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D2: CHECK SPEAKER RETURN CIRCUIT FOR SHORT TO GROUND



- 1 Measure the resistance between the following audio connector pins and ground.
 - (Front left speaker) C344 pin 21, circuit 10-MDIO (GY/BK), harness side and ground.
 - (Rear left speaker) C344 pin 22, circuit 10-MD11 (GY/VT), harness side and ground.
 - (Front right speaker) C344 pin 12, circuit 10-MD17 (GY/RD), harness side and ground.
 - (Rear right speaker) C344 pin 23, circuit 10-MD18 (GY), harness side and ground.
- Are the resistances greater than 10,000 ohms (open circuit)?
 - **Yes**
INSTALL a new audio unit.

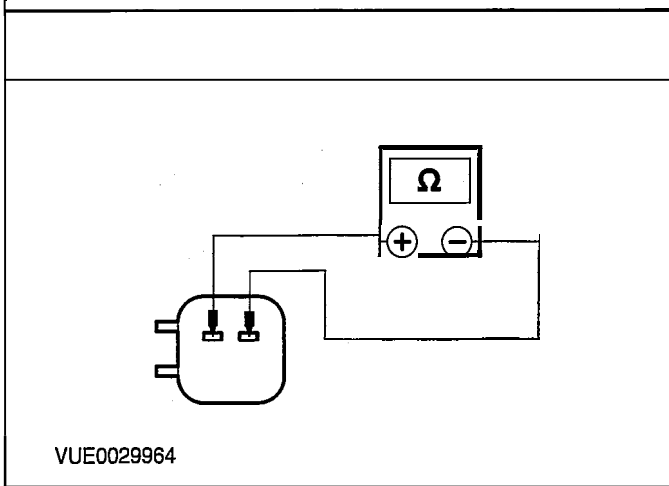
REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).
TEST the system for normal operation.
 - **No**
REPAIR the circuit(s). TEST the system for normal operation.

PINPOINT TEST E : NO SOUND FROM ONE OR MORE OF THE SPEAKERS

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

E1: CHECK THE SPEAKER RESISTANCE



- 1 Disconnect Inoperative Speaker.
- 2 Measure the resistance between the inoperative speaker pin 1 and pin 2, component side.
 - Is the resistance approximately 4 ohms?
 - **Yes**
GO to E2.
 - **No**
INSTALL a new speaker(s). TEST the system for normal operation.

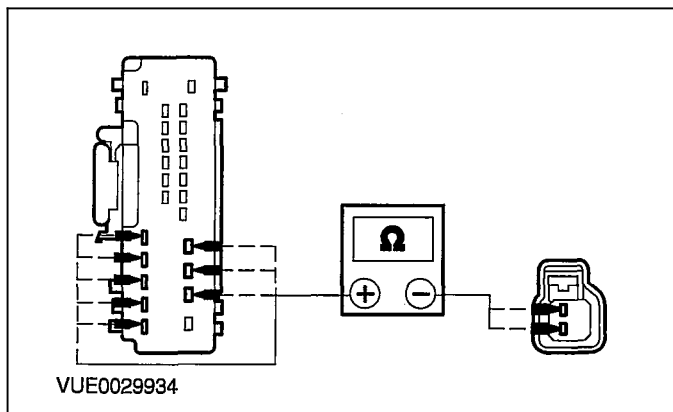
E2: CHECK SPEAKER CIRCUIT RESISTANCE

- 1 Disconnect Audio Unit C344.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



Measure the resistance between the audio unit C344 and the inoperative speaker(s) connector pins.

- (Front left speaker) C344 pin 8, circuit 8-MD10 (WH/BK), harness side and C527 pin 1, circuit 8-MD28 (WH), harness side.
- (Front left speaker) C344 pin 21, circuit 10-MD10 (GY/BK), harness side and C527 pin 2, circuit 10-MD28 (GY), harness side.
- (Front right speaker) C344 pin 11, circuit 8-MD17 (WH/RD), harness side and C528 pin 1, circuit 8-MD28 (WH), harness side.
- (Front right speaker) C344 pin 12, circuit 10-MD17 (GY/RD), harness side and C528 pin 2, circuit 10-MD28 (GY), harness side.
- (Rear left speaker) C344 pin 9, circuit 8-MD11 (WHNT), harness side and C533 pin 1, circuit 8-MD29 (WHM), harness side.
- (Rear left speaker) C344 pin 22, circuit 10-MD11 (GYM), harness side and C533 pin 2, circuit 10-MD29 (GY/WH), harness side.
- (Rear right speaker) C344 pin 10, circuit 8-MD18 (WH), harness side and C534 pin 1, circuit 8-MD29 (WHNT), harness side.
- (Rear right speaker) C344 pin 23, circuit 10-MD18 (GY), harness side and C534 pin 2, circuit 10-MD29 (GY/WH), harness side.

- Is the resistance less than 1 ohm?

→ **Yes**

INSTALL a new speaker. TEST the system for normal operation. If the concern persists, INSTALL a new audio unit.

REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).

Test the system for normal operation.

→ **No**

REPAIR the relevant circuit. TEST the system for normal operation.

PINPOINT TEST F : THE AUDIO REMOTE CONTROL IS INOPERATIVE/DOES NOT OPERATE CORRECTLY

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

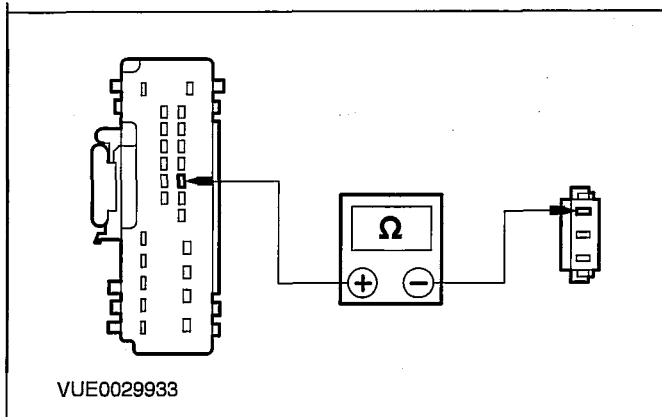
F1: CHECK THE CIRCUIT 8-MD26 FOR OPEN

☐ Disconnect Audio Unit C344.

☐ Disconnect Audio Remote Control C681.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

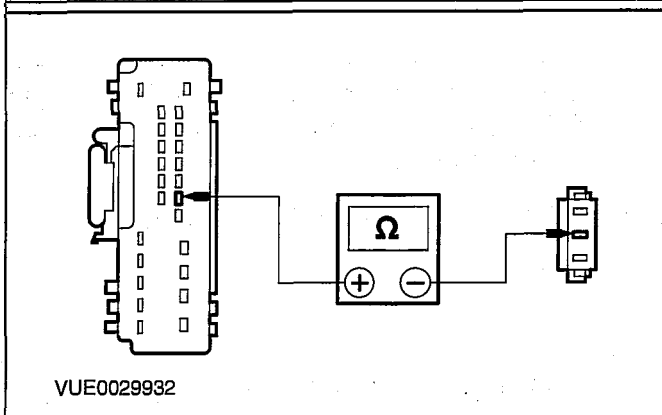
- 3 Measure the resistance between the audio unit C344 pin 18, circuit 8-MD26 (WHIBK), harness side and the audio remote control C681 pin 1, circuit 8-MD26 (WH/BK), harness side.

- Is the resistance less than 1 ohm?

→ **Yes**
GO to F2.

→ **No**
REPAIR the circuit. TEST the system for normal operation.

F2: CHECK CIRCUIT 9-MD26 (BN/YE) FOR OPEN



- Measure the resistance between the audio unit C344 pin 19, circuit 9-MD26 (BNNE), harness side and the audio remote control C681 pin 2, circuit 9-MD26 (BNNE), harness side.

- Is the resistance less than 1 ohm?

→ **Yes**
INSTALL a new audio remote control. If the concern persists, INSTALL a new audio unit.
REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation).
TEST the system for normal operation.

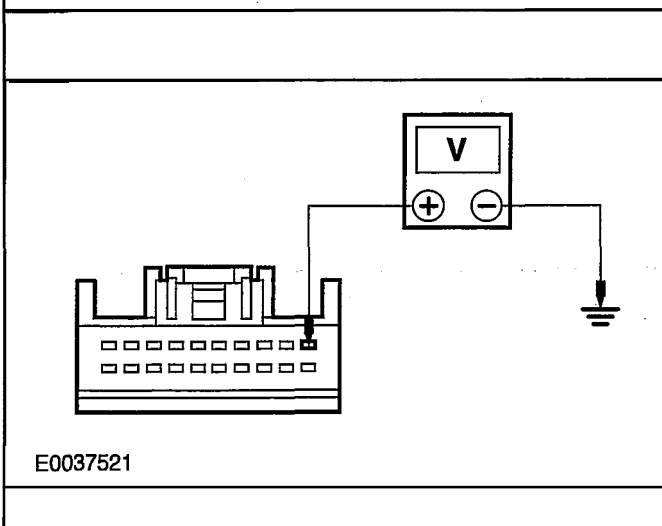
→ **No**
REPAIR the circuit. TEST the system for normal operation.

PINPOINT TEST G : THE DVD PLAYER IS INOPERATIVE/DOES NOT OPERATE CORRECTLY

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

G1: CHECK THE DVD PLAYER FOR POWER



- 1 Disconnect DVD Player C437.

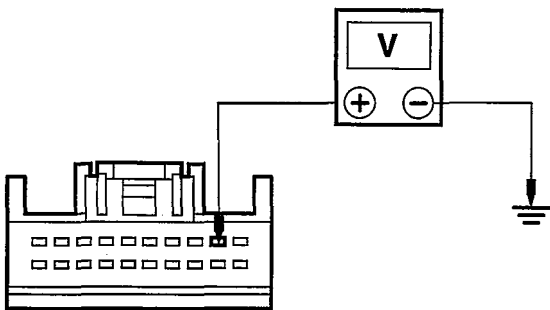
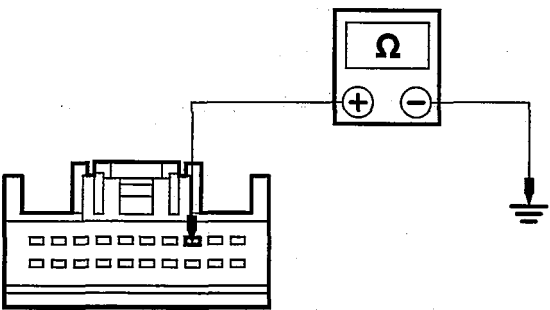
- 2 Measure the voltage between the DVD player C437 pin 1, circuit 29-MD8 (OG), harness side and ground.

- Is the voltage greater than 10 volts?

→ **Yes**
GO to G2.

→ **No**
REPAIR circuit 29-MD8 (OG). TEST the system for normal operation. If the concern persists, install a new CJB. Test the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G2: CHECK THE DVD PLAYER FOR SWITCHED POWER	
 <p>E0037522</p>	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> Measure the voltage between the DVD player C437 pin 2, circuit 75-MD8 (YEIBU), harness side and ground. <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <ul style="list-style-type: none"> → Yes GO to G3. → No REPAIR circuit 75-MD8 (YE/BU). Test the system for normal operation.
G3: CHECK THE DVD PLAYER FOR GROUND	
 <p>E0037520</p>	<ol style="list-style-type: none"> Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

☐ Measure the resistance between the DVD player C437 pin 3, circuit 31-MD8 (BK), harness side and ground.

- Is the resistance less than 1 ohm?

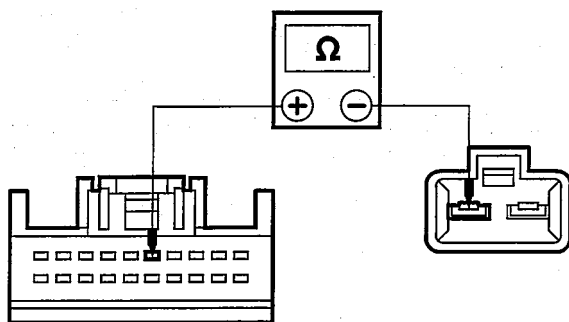
→ **Yes**

Right-hand drive vehicles: GO to G4.

Left-hand drive vehicles: INSTALL a new DVD player. Test the system for normal operation.

→ **No**

REPAIR circuit 31-MD8 (BK). Test the system for normal operation.

G4: CHECK FROM THE DVD PLAYER TO HOOD SWITCH FOR OPEN

E0037536

1 Measure the resistance between the DVD player C437 PIN 5, 31S-GL7A (BK-YE) and the hood switch C604 pin 1, 31S-GL7A (BK-YE).

- Is the voltage greater than 1 ohm?

→ **Yes**

INSTALL a new DVD player. Test the system for normal operation.

→ **No**

REPAIR circuit 31S-GL7A (BK/YE). Test the system for normal operation.

DIAGNOSIS AND TESTING

Audio System — Vehicles Built From: 1012005

Refer to Wiring Diagrams Section 415-01, for schematic and connector information.

Refer to Wiring Diagrams Section 415-03, for schematic and connector information.

Refer to Wiring Diagrams Section 415-07, for schematic and connector information.

General Equipment

Worldwide Diagnostic System (WDS)

Inspection and Verification

NOTE: If the keycode is entered incorrectly 3 times, the system will lock out. The component can only be unlocked by the manufacturer.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> - Audio unit - Antenna - Foreign objects contacting speaker - Trim poorly fitted/resonance - Audio control switch (if equipped) - Digital versatile disc (DVD) player 	<ul style="list-style-type: none"> - Fuse(s) - Wiring harness - Electrical connector(s) - Speaker(s) - Audio unit - Audio control switch (if equipped) - DVD player - Antenna cable - Central junction box (CJB)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Self-Diagnostic Mode.

Self-Diagnostic Mode - 5000C, 6000CD, 6006CDC Audio Units

NOTE: The audio unit must be in radio mode before entering the Self-Diagnostic Mode.

1. To enter the audio unit Self-Diagnostic Mode, switch the audio unit ON and press the preset buttons 3 and 5 together for more than 2 seconds.
2. Release the preset buttons 3 and 5 and the audio unit will enter the Self-Diagnostic Mode.

Self-Diagnostic Mode

Message Displayed	Circuit Tested
1. 4CH RF for four channel system 2CH RF for two channel system.	Right-hand front speaker circuit.
2. 4CH LF for four channel system 2CH LF for two channel system.	Left-hand front speaker circuit.
3. 4CH RR for four channel system.	Right-hand rear speaker circuit.
4. 4CH LR for four channel system.	Left-hand rear speaker circuit.

3. If the cause is not evident after the Self-Diagnostic Mode, connect the WDS to the data link connector (DLC).
4. Retrieve the Diagnostic Trouble Code (DTC)s and refer to the DTC Index Chart.

Self-Diagnostic Mode - 1500RDS Audio Unit

NOTE: The audio unit must be in radio mode before entering the Self-Diagnostic Mode.

1. To enter the audio unit Self-Diagnostic Mode, switch the audio unit ON. Within four seconds press the preset buttons 1 and 3 together.
2. Release the preset buttons 1 and 3 and the audio unit will enter the Self-Diagnostic Mode.

Self-Diagnostic Mode

Message Displayed	Circuit Tested
1. 2CH RF for two channel system.	Right-hand front speaker circuit.
2. 2CH LF for two channel system.	Left-hand front speaker circuit.
3. FM frequency received.	Antenna cable.

DIAGNOSIS AND TESTING

3. If the cause is not evident after the Self-Diagnostic Mode, connect the WDS to the data link connector (DLC).
4. Retrieve the Diagnostic Trouble Code (DTC)s and refer to the DTC Index Chart.

Diagnostic Trouble Code (DTC) Index Chart

DTC	Description/Condition	Possible Source	Action
B1342	Audio unit internal failure	Audio unit	INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).
B2401	Tape player failure	Audio unit	INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).
B2402	Audio unit overheated	Audio unit	Allow the audio unit to cool and check for DTC B2402. If the concern persists, INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).
B2403	CD player internal failure	Audio unit	INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).
B2404	Audio control switch circuit failure	Audio control switch	GO to Pinpoint Test E.

DIAGNOSIS AND TESTING

DTC	Description/Condition	Possible Source	Action
B2405	Audio unit overheated	Audio unit	Allow the audio unit to cool and check for DTC B2405. If the concern persists, INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).
B2406	CD player internal failure	Audio unit	INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).
B2408	Speaker line short circuit	Speaker(s)	GO to Pinpoint Test D.
B2477	Module configuration failure	Audio unit and central junction box (CJB)	REFER to the WDS.
P1628	Module ignition supply input	CJB	REFER to the WDS.

DIAGNOSIS AND TESTING

DTC	Description/Condition	Possible Source	Action
U0155	Controller area network (CAN) communication lost	CAN	REFER to: Communications Network - Vehicles Built From: 1012005 (418-00 Module Communications Network, Diagnosis and Testing).
U0238	CAN communication lost	CAN	REFER to: Communications Network - Vehicles Built From: 1012005 (418-00 Module Communications Network, Diagnosis and Testing).
U0187	CAN communication lost with CDDJ	CAN	REFER to: Communications Network - Vehicles Built From: 10/2005 (418-00 Module Communications Network, Diagnosis and Testing).
U0140	CAN communication lost with body control module	CAN	REFER to: Communications Network - Vehicles Built From: 1012005 (418-00 Module Communications Network, Diagnosis and Testing).

1. If the cause is still evident, refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The audio unit is inoperative/does not operate correctly 	<ul style="list-style-type: none"> Circuit. Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test A.
<ul style="list-style-type: none"> The display is blank - radio and cassette player operate 	<ul style="list-style-type: none"> Audio unit. 	<ul style="list-style-type: none"> INSTALL a new audio unit. <p>REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The display is blank - radio and CD player operate 	<ul style="list-style-type: none"> Audio unit. 	<ul style="list-style-type: none"> INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.
<ul style="list-style-type: none"> Poor reception 	<ul style="list-style-type: none"> Antenna. Antenna cable. Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
<ul style="list-style-type: none"> Poor quality/distorted sound from one or more speakers (not all speakers) 	<ul style="list-style-type: none"> Speaker(s). Circuit. Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test C.
<ul style="list-style-type: none"> No sound from all speakers 	<ul style="list-style-type: none"> Audio unit. 	<ul style="list-style-type: none"> INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.
<ul style="list-style-type: none"> No sound from one or more of the speakers (not all speakers) 	<ul style="list-style-type: none"> Speaker(s). Circuit. Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test D.
<ul style="list-style-type: none"> The audio control switch is inoperative/does not operate correctly. 	<ul style="list-style-type: none"> Circuit. Audio control switch. Audio unit. 	<ul style="list-style-type: none"> GO to Pinpoint Test E.
<ul style="list-style-type: none"> The digital versatile disc (DVD) player is inoperative/does not operate correctly 	<ul style="list-style-type: none"> Circuit(s). DVD player. 	<ul style="list-style-type: none"> GO to Pinpoint Test F.
<ul style="list-style-type: none"> No sound from headphone(s) 	<ul style="list-style-type: none"> Headphone(s). DVD player. 	<ul style="list-style-type: none"> Using a known good headphone, check the headphone in the right-hand and left-hand sockets. If sound is heard from each headphone socket, INSTALL a new headphone(s). If no sound is heard from the headphone socket(s), INSTALL a new DVD player. TEST the system for normal operation.
<ul style="list-style-type: none"> The audio unit clock is not displayed 	<ul style="list-style-type: none"> Audio unit connector. Audio unit. Instrument cluster. 	<ul style="list-style-type: none"> REFER to: Instrument Cluster - Vehicles Built From: 1012005 (413-01 Instrument Cluster, Diagnosis and Testing).

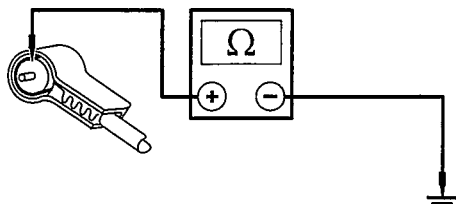
Pinpoint Tests

NOTE: Use a digital multimeter for all electrical measurements.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



TIW3801009

- 3 Measure the resistance between the antenna cable ground connector (shield), and ground.

Is the resistance less than 1 ohm?

→ **Yes**

GO to B2.

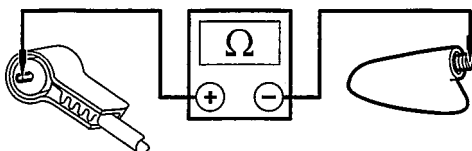
→ **No**

CLEAN and TIGHTEN the antenna base connection to the body. If the concern persists, INSTALL a new antenna cable.

REFER to: Antenna Cable (415-02 Antenna, Removal and Installation).

TEST the system for normal operation.

B2: CHECK THE ANTENNA CENTER CONDUCTOR FOR OPEN CIRCUIT



TIW3801010

- 1 Remove the antenna mast.

- 2 Measure the resistance of the center conductor between the ends of the antenna cable.

Is the resistance less than 1 ohm?

→ **Yes**

GO to B3.

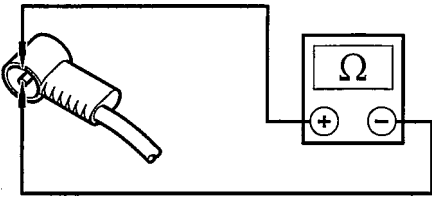
→ **No**

INSTALL a new antenna cable.

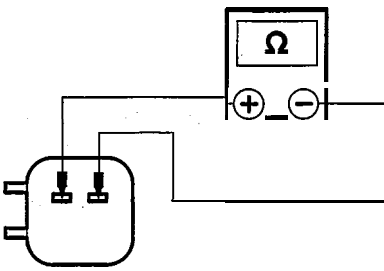
REFER to: Antenna Cable (415-02 Antenna, Removal and Installation).

TEST the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B3: CHECK THE ANTENNA CABLE FOR SHORT	
 <p>V3801158</p>	<p><input type="checkbox"/> Measure the resistance between the antenna center conductor and the antenna ground (shield).</p> <ul style="list-style-type: none"> Is the resistance greater than 10,000 ohms (open circuit)? <p>→ Yes CLEAN and TIGHTEN the ground connections at the base of the antenna and battery negative cable to the body. If concern persists, INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.</p> <p>→ No INSTALL a new antenna cable.</p> <p>REFER to: Antenna Cable (415-02 Antenna, Removal and Installation). TEST the system for normal operation. If the concern persists, INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).</p>

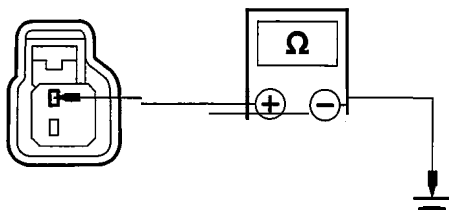
PINPOINT TEST J : POOR QUALITY/DISTORTED SOUND FROM ONE OR MORE SPEAKERS (NOT ALL SPEAKERS)

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C1: CHECK THE SPEAKER RESISTANCE	
 <p>VUE0029964</p>	<p>1 Disconnect Inoperative Speaker.</p> <p>2 Measure the resistance between the inoperative speaker pin 1 and pin 2, component side.</p> <ul style="list-style-type: none"> Is the resistance approximately 4.0 ohms? <p>→ Yes GO to C2.</p> <p>→ No INSTALL a new speaker. TEST the system for normal operation.</p>
C2: CHECK THE SPEAKER INPUT FOR SHORT TO GROUND	
	<p><input type="checkbox"/> Disconnect Audio Unit C775.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



VUE0029843

2 Measure the resistance between the inoperative speaker connector pin 1, harness side and ground.

- Is the resistance greater than 10,000 ohms (open circuit)?

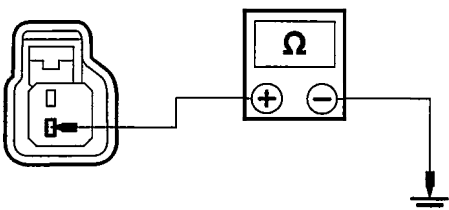
→ **Yes**

GO to C3.

→ **No**

REPAIR the inoperative speaker input circuit.
TEST the system for normal operation.

C3: CHECK THE SPEAKER RETURN FOR SHORT TO GROUND



VUE0029844

1 Measure the resistance between the inoperative speaker connector pin 2, harness side and ground.

- Is the resistance greater than 10,000 ohms (open circuit)?

→ **Yes**

INSTALL a new speaker. TEST the system for normal operation. If the concern persists, INSTALL a new audio unit.

REFER to: Audio Unit - Vehicles Built From:
1012005 (415-01 Audio Unit, Removal and Installation).

→ **No**

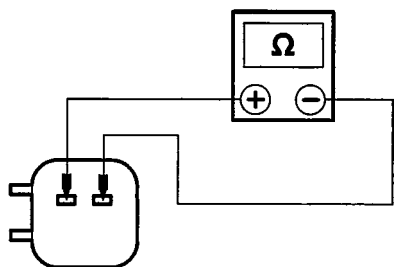
REPAIR the speaker return circuit. TEST the system for normal operation.

PINPOINT TEST K : NO SOUND FROM ONE OR MORE OF THE SPEAKERS (NOT ALL SPEAKERS)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D1: CHECK THE SPEAKER RESISTANCE



VUE0029964

Disconnect Inoperative Speaker.

1 Measure the resistance between the inoperative speaker pin 1 and pin 2, component side.

- Is the resistance approximately 4.0 ohms?

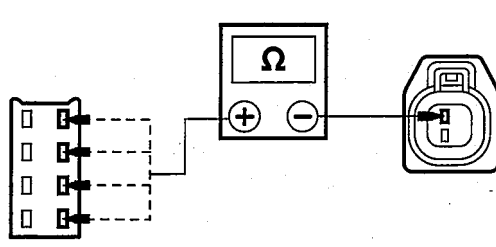
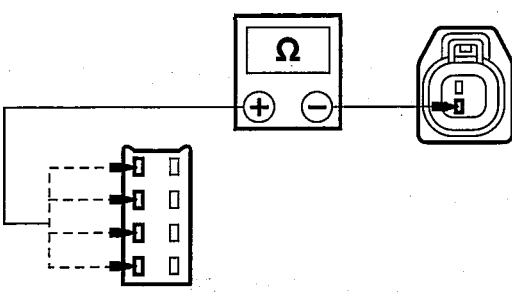
→ **Yes**

GO to D2.

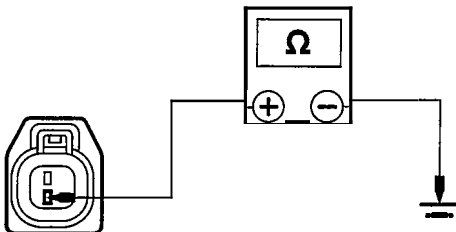
→ **No**

INSTALL a new speaker(s). TEST the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D2: CHECK THE INOPERATIVE SPEAKER(S) CONNECTOR PIN 1 CIRCUIT	
 <p>E66028</p>	<ol style="list-style-type: none"> 1 Disconnect Audio Unit C776. 2 Measure the resistance between the following audio unit C776 pins, harness side and the inoperative speaker(s) connector pin 1, harness side: <ul style="list-style-type: none"> - (Left front speaker) C527 pin 1, circuit 8-MD28 (WH) to C776 pin 3, circuit 8-MD10 (WH/BK). - (Right front speaker) C528 pin 1, circuit 8-MD28 (WH) to C776 pin 2, circuit 8-MD17 (WH/RD). - (Left rear speaker) C533 pin 1, circuit 8-MD29 (WHNT) to C776 pin 4, circuit 8-MD11 (WHNT). - (Right rear speaker) C534 pin 1, circuit 8-MD29 (WHNT) to C776 pin 1, circuit 8-MD18 (WH). <ul style="list-style-type: none"> • Is the resistance less than 1 ohm? → Yes GO to D3. → No REPAIR the circuit in question. TEST the system for normal operation.
D3: CHECK THE INOPERATIVE SPEAKER(S) CONNECTOR PIN 2 CIRCUIT	
 <p>E66039</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the following audio unit C776 pins, harness side and the inoperative speaker(s) connector pin 2, harness side: <ul style="list-style-type: none"> - (Left front speaker) C527 pin 2, circuit 10-MD28 (GY) to C776 pin 7, circuit 10-MD10 (GY/BK). - (Right front speaker) C528 pin 2, circuit 10-MD28 (GY) to C776 pin 6, circuit 10-MD17 (GY/RD). - (Left rear speaker) C533 pin 2, circuit 10-MD29 (GYNVH) to C776 pin 8, circuit 10-MD11 (GYNVH). - (Right rear speaker) C534 pin 2, 10-MD29 (GYNVH) to C776 pin 5, 10-MD18 (GY). <ul style="list-style-type: none"> • Is the resistance less than 1 ohm? → Yes GO to D4. → No REPAIR the circuit in question. TEST the system for normal operation.

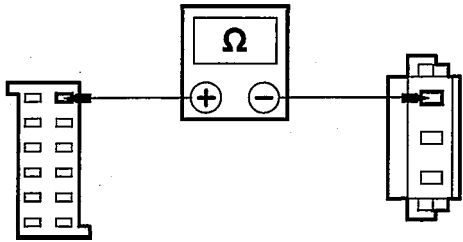
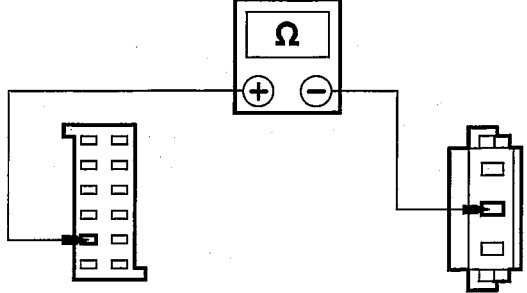
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D4: CHECK THE INOPERATIVE SPEAKER(S) CIRCUIT FOR SHORT TO GROUND	
 <p>E66046</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the following inoperative speaker(s) connector pin ■ , harness side and ground: <ul style="list-style-type: none"> - (Left front speaker) C527 pin 1, circuit 8-MD28 (WH), to ground. - (Right front speaker) C528 pin 1, circuit 8-MD28 (WH), to ground. - (Left rear speaker) C533 pin 1, circuit 8-MD29 (WHM), to ground. - (Right rear speaker) C534 pin 1, 8-MD29 (WHM), to ground. • Is the resistance greater than 10,000 ohms (open circuit)? <ul style="list-style-type: none"> → Yes INSTALL a new speaker. TEST the system for normal operation. → No REPAIR the circuit in question. TEST the system for normal operation.

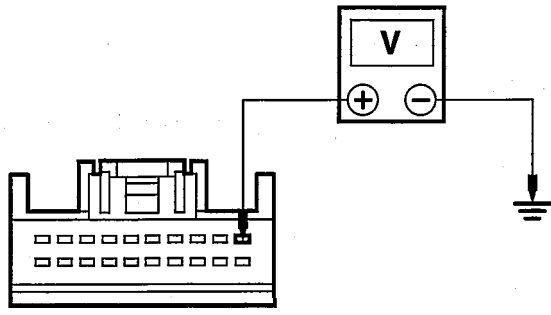
PINPOINT TEST L : THE AUDIO CONTROL SWITCH IS **INOPERATIVE/DOES NOT OPERATE CORRECTLY**

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: CHECK THE AUDIO UNIT OPERATES CORRECTLY USING THE AUDIO UNIT CONTROLS	
	<ol style="list-style-type: none"> 1 Operate the audio unit using the audio unit controls. <ul style="list-style-type: none"> • Does the audio unit operate correctly using the audio controls? <ul style="list-style-type: none"> → Yes GO to E2. → No INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation). TEST the system for normal operation.
E2: CHECK CIRCUIT 8-MD26 (WHIBK) FOR OPEN CIRCUIT	
	<ol style="list-style-type: none"> 1 Disconnect Audio Unit C777. 2 Disconnect Audio Control Switch C681.

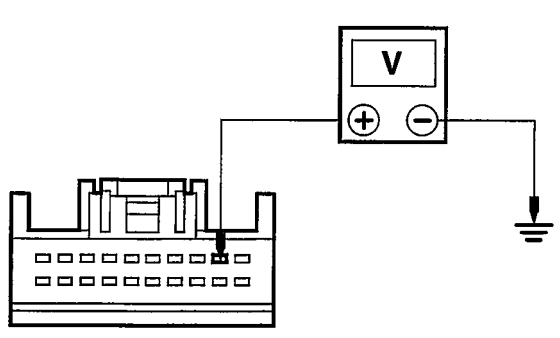
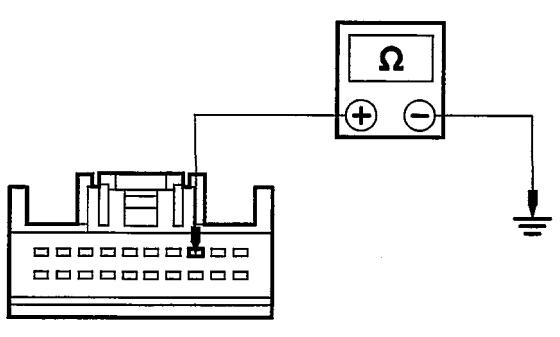
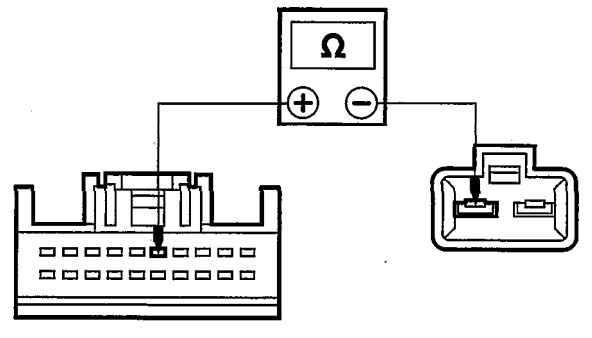
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>E66047</p>	<p>□ Measure the resistance between the audio unit C777 pin 6, circuit 8-MD26 (WHIBK) harness side and the audio control switch C681 pin 1, circuit 8-MD26 (WHIBK) harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 1 ohm? <p>→ Yes GO to E3,</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
E3: CHECK CIRCUIT 9-MD26 (BNNE) FOR OPEN CIRCUIT	
 <p>E66054</p>	<p>1 Measure the resistance between the audio unit C777 pin 8, circuit 9-MD26 (BNNE) harness side and the audio control switch C681 pin 2, circuit 9-MD26 (BNNE) harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 1 ohm? <p>→ Yes INSTALL a new audio control switch. TEST the system for normal operation. If the concern persists, INSTALL a new audio unit.</p> <p>REFER to: Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation).</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

PINPOINT TEST M : THE DIGITAL VERSATILE DISC (DVD) PLAYER IS INOPERATIVE/DOES NOT OPERATE CORRECTLY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>F1: CHECK THE DVD PLAYER FOR POWER</p>  <p>E0037521</p>	<p>1 Disconnect DVD Player C437.</p> <p>2 Measure the voltage between the DVD player C437 pin 1, circuit 29-MD8 (OG), harness side and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes GO to F2.</p> <p>→ No REPAIR circuit 29-MD8 (OG). TEST the system for normal operation. If the concern persists, INSTALL a new CJB. Test the system for normal operation.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
F2: CHECK THE DVD PLAYER FOR SWITCHED POWER	
 <p>E0037522</p>	<p>1 Ignition switch in position II.</p> <p>2 Measure the voltage between the DVD player C437 pin 2, circuit 75-MD8 (YEIBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? → Yes GO to F3. → No REPAIR circuit 75-MD8 (YEIBU). Test the system for normal operation.
F3: CHECK THE DVD PLAYER FOR GROUND	
 <p>E0037520</p>	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Measure the resistance between the DVD player C437 pin 3, circuit 31-MD8 (BK), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 1 ohm? → Yes Right-hand drive vehicles: GO to F4. Left-hand drive vehicles: INSTALL a new DVD player. Test the system for normal operation. → No REPAIR circuit 31-MD8 (BK). Test the system for normal operation.
F4: CHECK THE DVD PLAYER TO HOOD SWITCH FOR OPEN CIRCUIT	
 <p>E0037536</p>	<p>1 Disconnect Hood Switch C604.</p> <p>2 Measure the resistance between the DVD player C437 pin 5, circuit 31S-GL7A (BK/YE) and the hood switch C604 pin 1, circuit 31S-GL7A (BWE), harness side.</p> <ul style="list-style-type: none"> Is the resistance less than 1 ohm? → Yes INSTALL a new DVD player. Test the system for normal operation. → No REPAIR circuit 31S-GL7A (BWE). Test the system for normal operation.

SECTION 415-01 Audio Unit

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

DIAGNOSIS AND TESTING

Audio System..... 415-01-2

REMOVAL AND INSTALLATION

Audio Unit — Vehicles Built Up To: 1012005..... (38 222 0) 415-01-3

Audio Unit — Vehicles Built From: 1012005..... (38 222 0) 415-01-4

DIAGNOSIS AND TESTING**Audio System**

REFER to Section 415-00 [Information and Entertainment System - General Information].

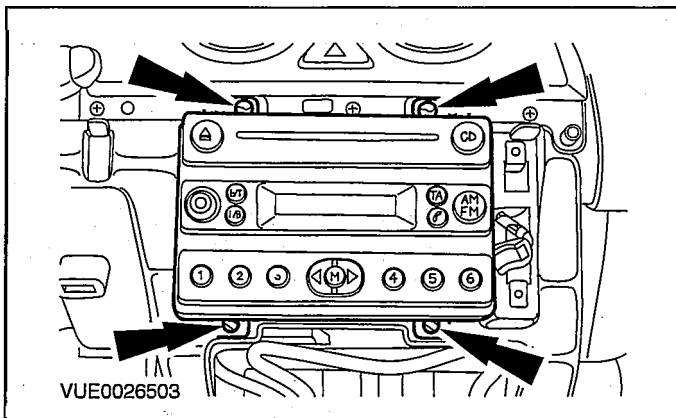
REMOVAL AND INSTALLATION

Audio Unit — Vehicles Built Up To: 10/2005(38 222 0)

Removal

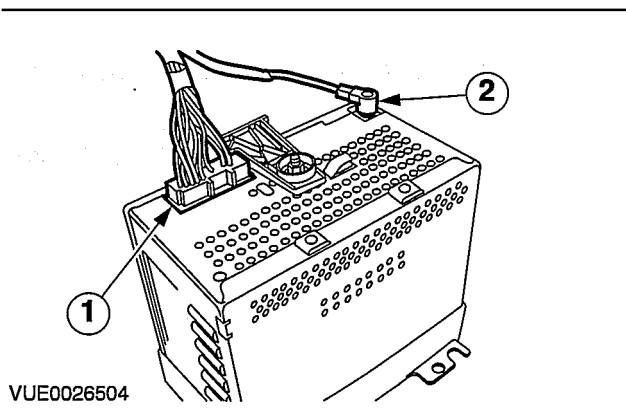
NOTE: It is not necessary to remove the audio unit in order to obtain the serial number. To obtain the serial number, simultaneously PRESS buttons 2 and 6. The serial number will be shown in the audio unit display.

1. Remove the climate control assembly. For additional information, refer to Section 412-04 [Control Components].
2. Detach the audio unit from the instrument panel.

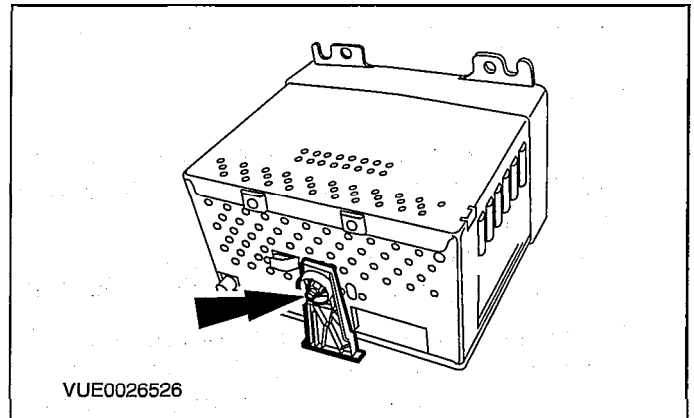


3. Disconnect the electrical connectors and remove the audio unit.

1. Disconnect the electrical connector.
2. Disconnect the antenna cable connector.



4. Remove the audio unit rear support.



Installation

CAUTIONS:

⚠ To prevent damage to the new audio unit while installing the climate control and audio unit trim panel, apply masking tape to the three sections of the audio unit.

⚠ To prevent possible damage to the audio unit while connecting the electrical connector, make sure that the antenna cable connector is connected first.

⚠ The audio unit wiring harness must not become trapped when installing the audio unit.

NOTE: The audio unit rear support must engage with the audio unit support bracket.

To install, reverse the removal procedure.

REMOVAL AND INSTALLATION

Audio Unit — Vehicles Built From: 10/2005(38 222 0)

General Equipment

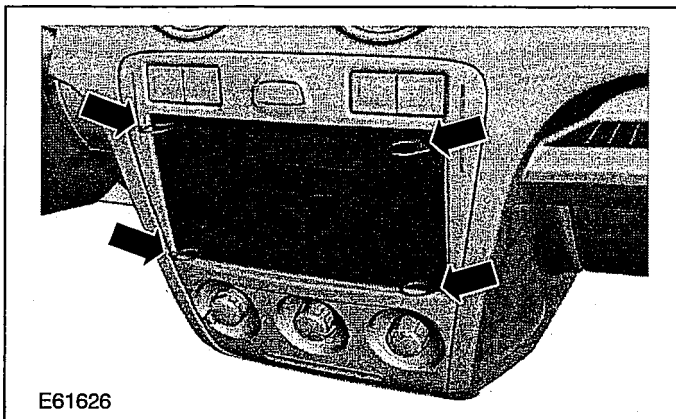
Audio unit removal tools (GV3301)

Removal

1. If a new audio unit is to be installed, connect WDS and upload the audio unit configuration information using the Programmable Modules Installation Routine, prior to commencing the removal of the audio unit.

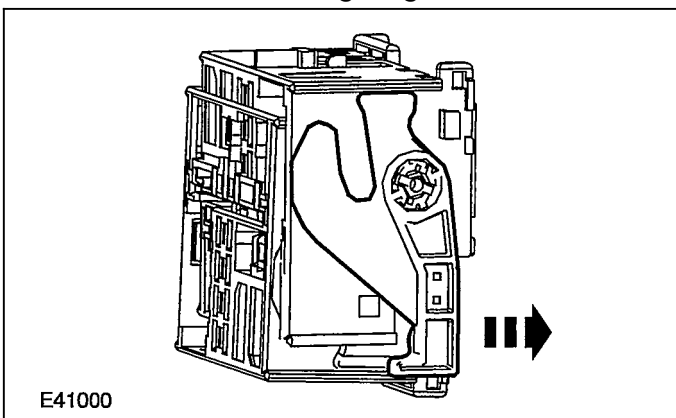
NOTE:When installing the audio unit removal tools, make sure that the wording on the audio unit removal tools is followed, TOP L indicates the top of the tool, left-hand side of the audio unit and TOP R indicates the top of the tool, right-hand side of the audio unit.

2. Using the audio unit removal tools, detach the audio unit from the instrument panel.

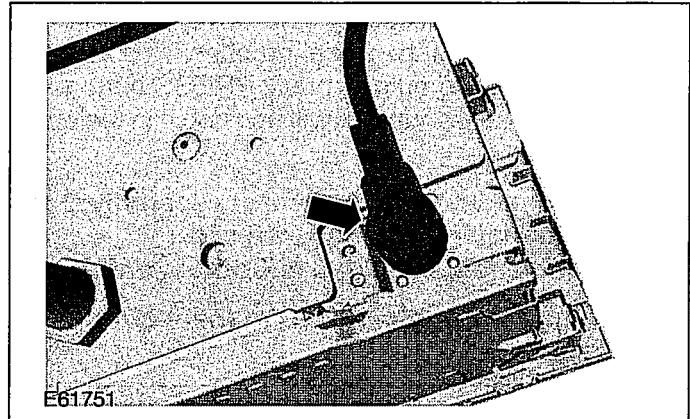


3. Disconnect the audio unit electrical connector.

- Release the locking tangs.



4. Disconnect the antenna cable electrical connector and remove the audio unit.



Installation

1. CAUTIONS:

⚠ To prevent possible damage to the audio unit while connecting the audio unit electrical connector, make sure that the antenna cable electrical connector is connected first.

⚠ The audio unit wiring harness must not become trapped when installing the audio unit.

NOTE: Remove the audio unit removal tools from the audio unit by releasing the spring clips before installing the original audio unit.

NOTE:When installing a new audio unit, the audio unit must be configured by selecting the Programmable Module Installation Routine on WDS.

To install, reverse the removal procedure.

SECTION 415-02 Antenna

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
----------	------

DIAGNOSIS AND TESTING

Antenna.....	415-02-2
--------------	----------

REMOVAL AND INSTALLATION

. Antenna Cable.....	415-02-3
----------------------	----------

DIAGNOSIS AND TESTING**Antenna**

REFER to Section 415-00 [Information and Entertainment System - General Information].

REMOVAL AND INSTALLATION

Antenna Cable

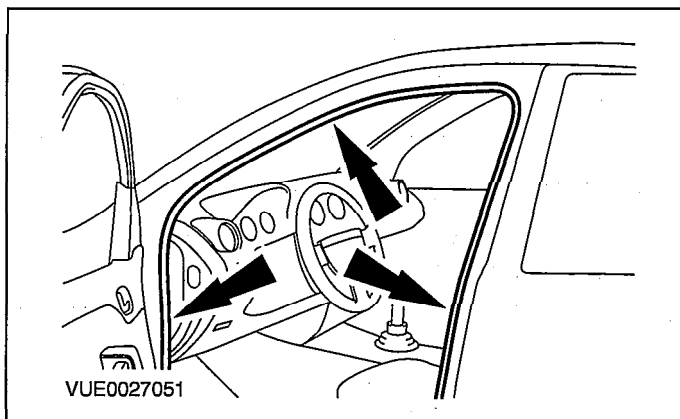
General Equipment

Two suitable draw cords, each with a minimum length of one meter

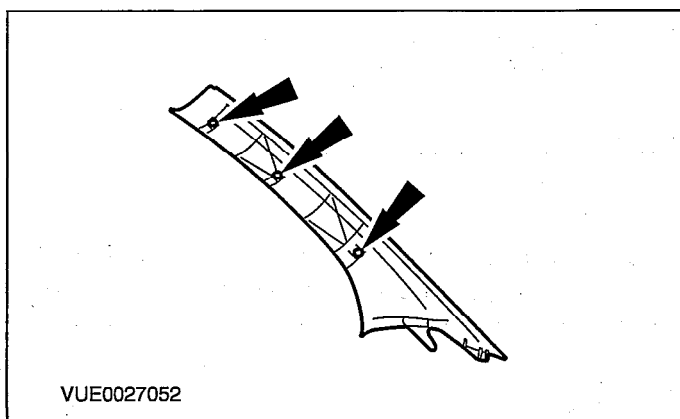
Removal

All vehicles

1. Detach the front door opening weatherstrips.

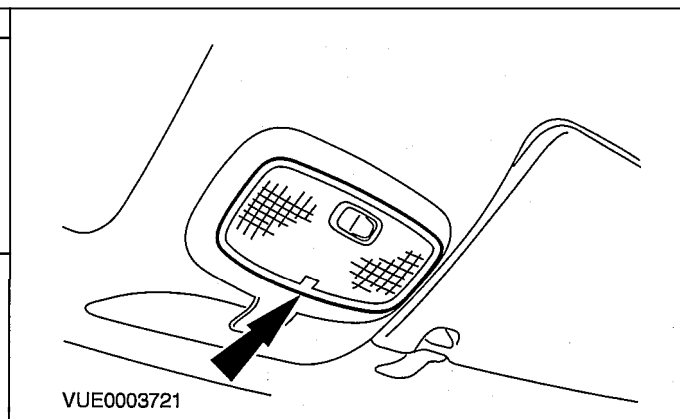


2. Remove the A-pillar trim panels (A-pillar trim shown removed to show location of retaining clips).

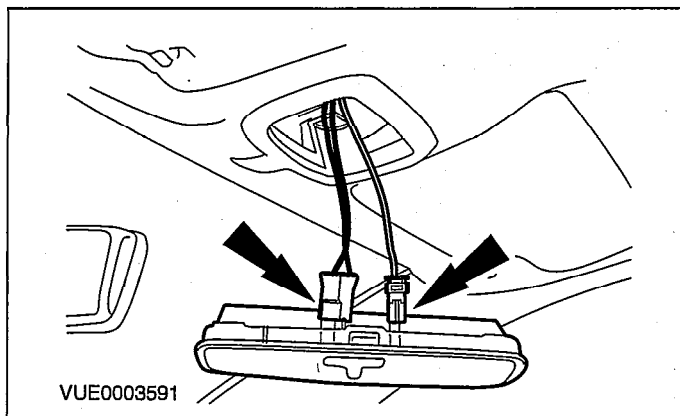


Vehicles without roof opening panel

3. Detach the interior lamp.

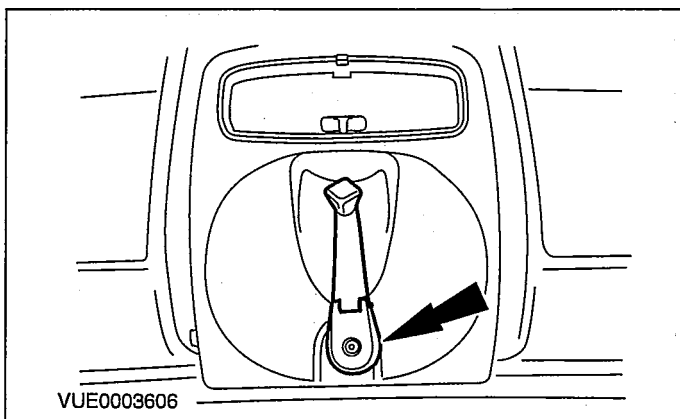


4. Disconnect the electrical connectors and remove the interior lamp.



Vehicles with manual roof opening panel

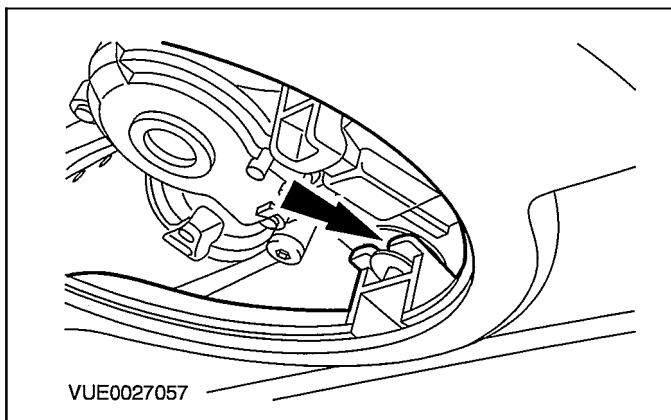
5. Remove the roof opening panel regulator handle.



REMOVAL AND INSTALLATION

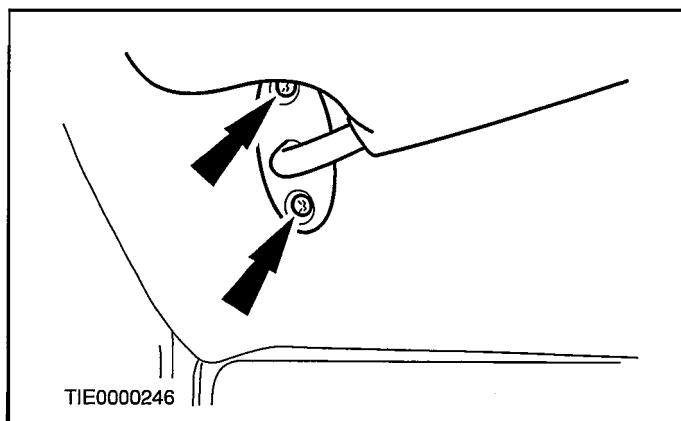
Vehicles with overhead console

6. Remove the overhead console. For additional information, refer to Section 501-12 [Instrument Panel and Console].
7. Detach the headliner at the rear of the overhead console opening.

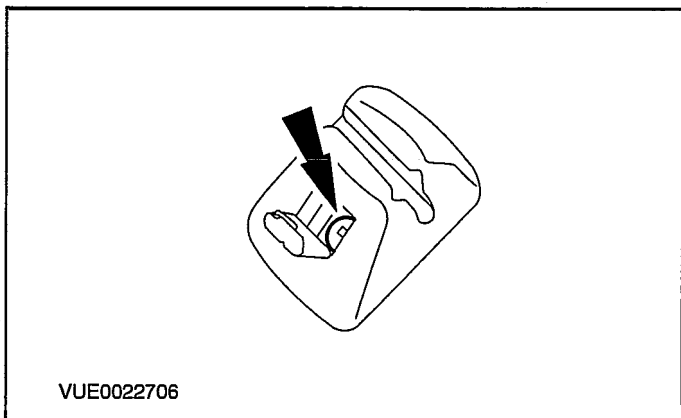


All vehicles

8. Remove the sun visors.



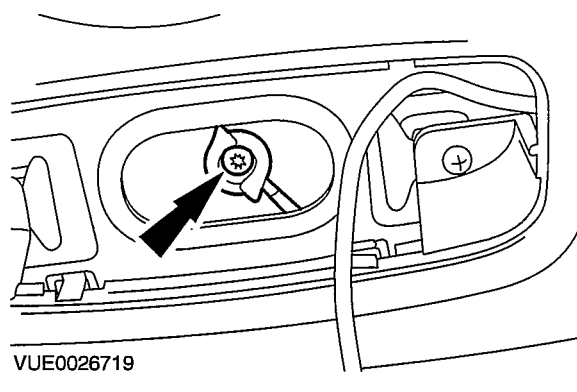
9. Remove the sun visor retaining clips.



10. Carefully detach the front edge of the headliner to allow access to the antenna cable.

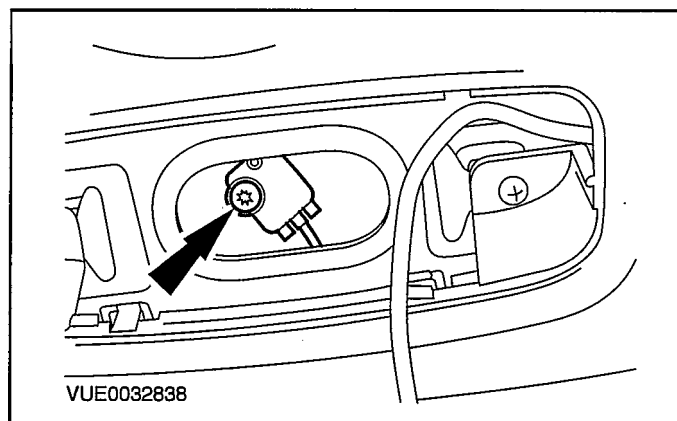
Vehicles without navigation system

11. Disconnect the antenna cable from the antenna base.



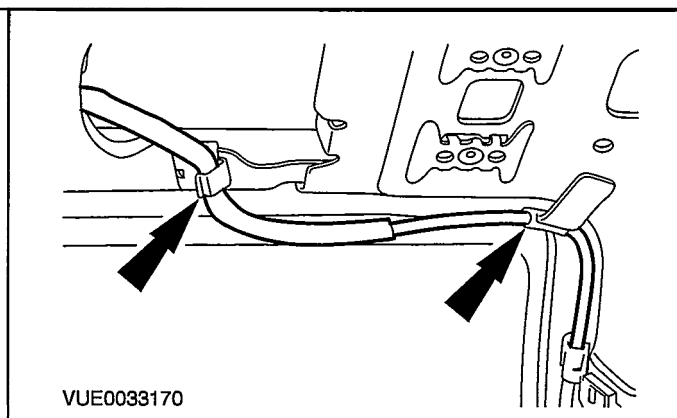
Vehicles with navigation system

12. Disconnect the antenna cable from the antenna base.



All vehicles

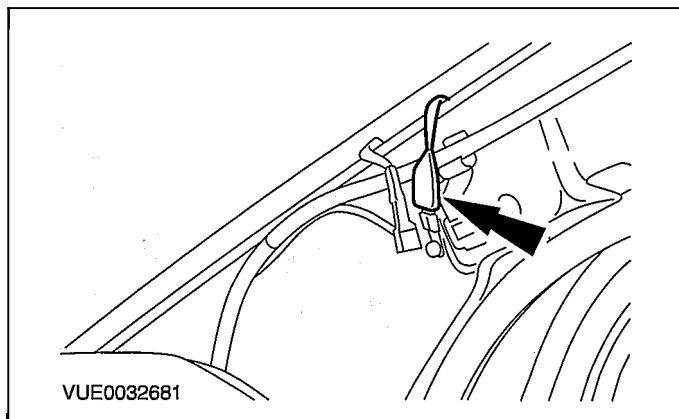
13. Detach the antenna cable from the roof panel (headliner shown removed for clarity).



REMOVAL AND INSTALLATION

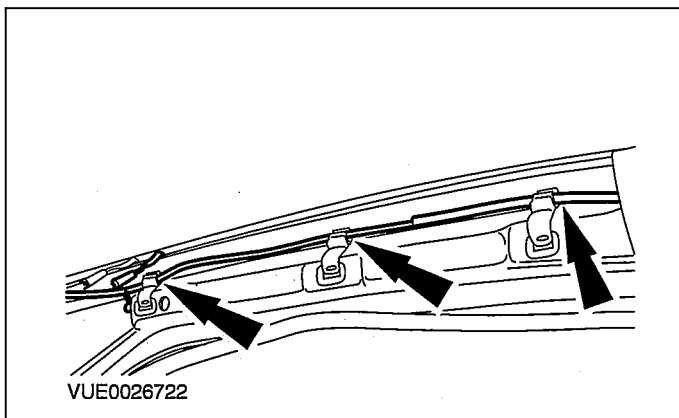
Vehicles with heated windshield

14. Disconnect the heated windshield ground connector.



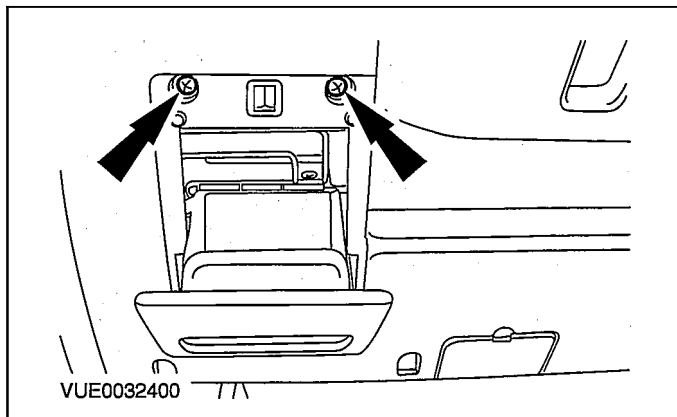
All vehicles

15. Detach the antenna cable from the A-pillar

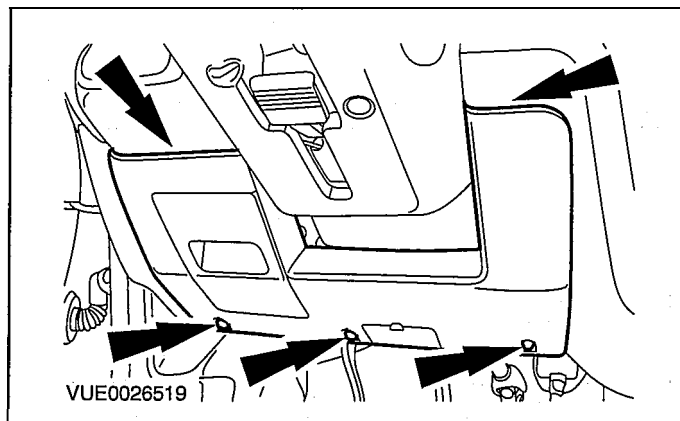


Right-hand drive vehicles

16. Open the stowage compartment and remove the instrument panel lower panel retaining screws.



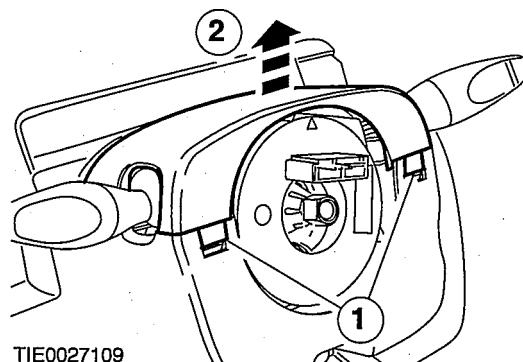
17. Remove the instrument panel lower panel.



18. **NOTE:** Turn the steering wheel to access the steering column upper shroud retaining clips.

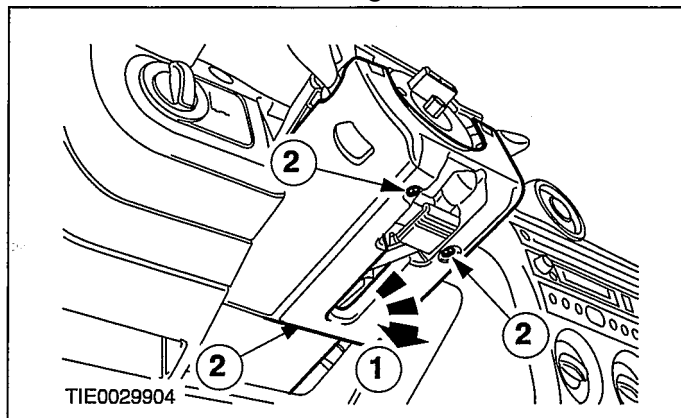
Detach the steering column upper shroud from the **steering** column lower shroud (steering wheel shown removed for clarity).

1. Using a thin bladed screwdriver, release the two clips (one each side).
2. Detach the shroud.



19. Remove the steering column lower shroud (steering wheel shown removed for clarity).

1. Release the steering column locking lever.
2. Remove the retaining screws.

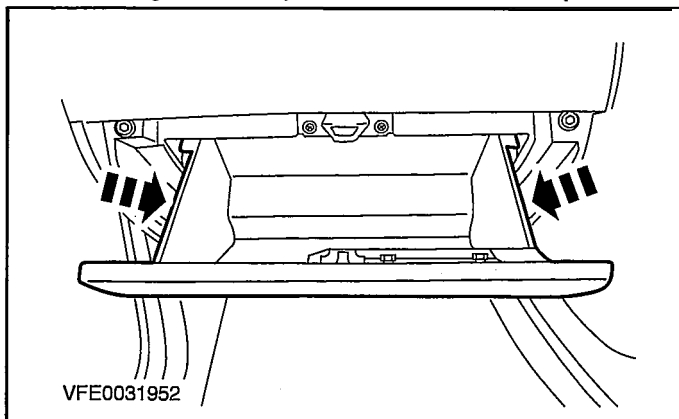


REMOVAL AND INSTALLATION

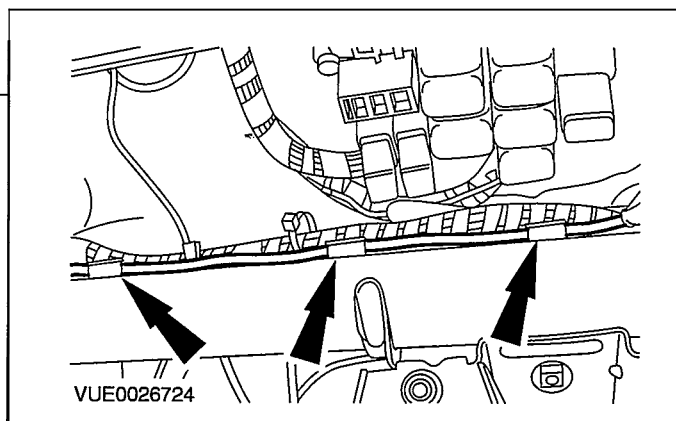
Left-hand drive vehicles

20. Fully open the glove compartment.

- Press the sides towards the center to release the glove compartment from the stops.



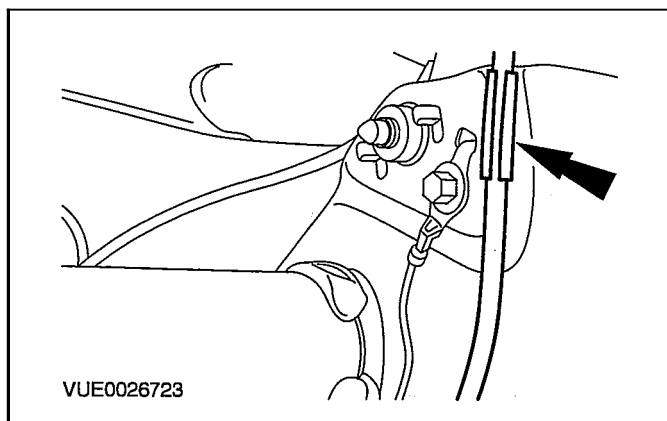
Detach the antenna cable from the retaining clips at the back of the cross-vehicle beam.



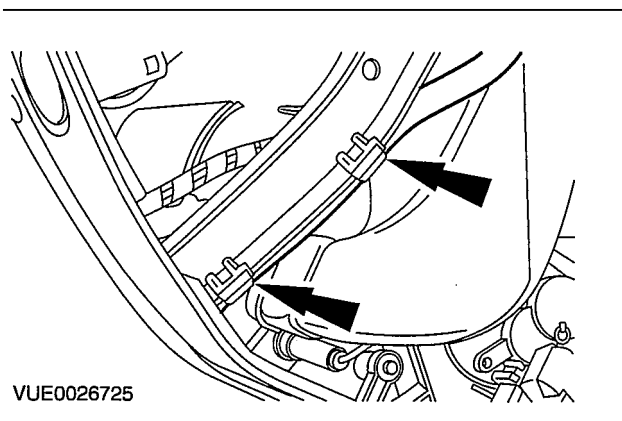
All vehicles

21. **NOTE:** Do not remove the antenna cable retaining clip from the cross-vehicle beam.

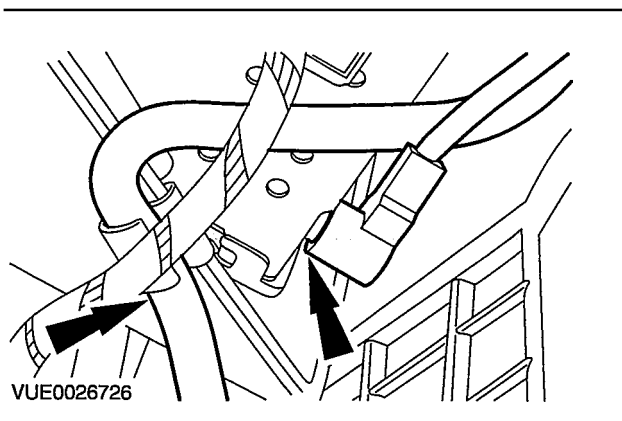
Detach the antenna cable from the retaining clip (instrument panel shown removed for clarity).



23. Detach the antenna cable from the clips behind the cross-vehicle beam support bracket.



24. Detach the antenna cable from the clip and disconnect the antenna cable from the audio unit.

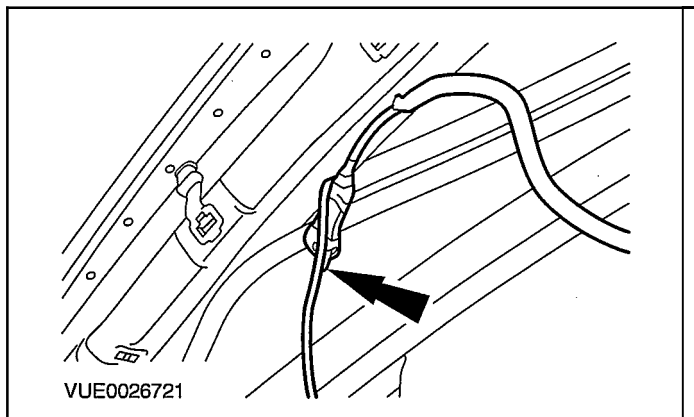


22. **NOTE:** Do not remove the antenna cable retaining clips cross-vehicle beam.

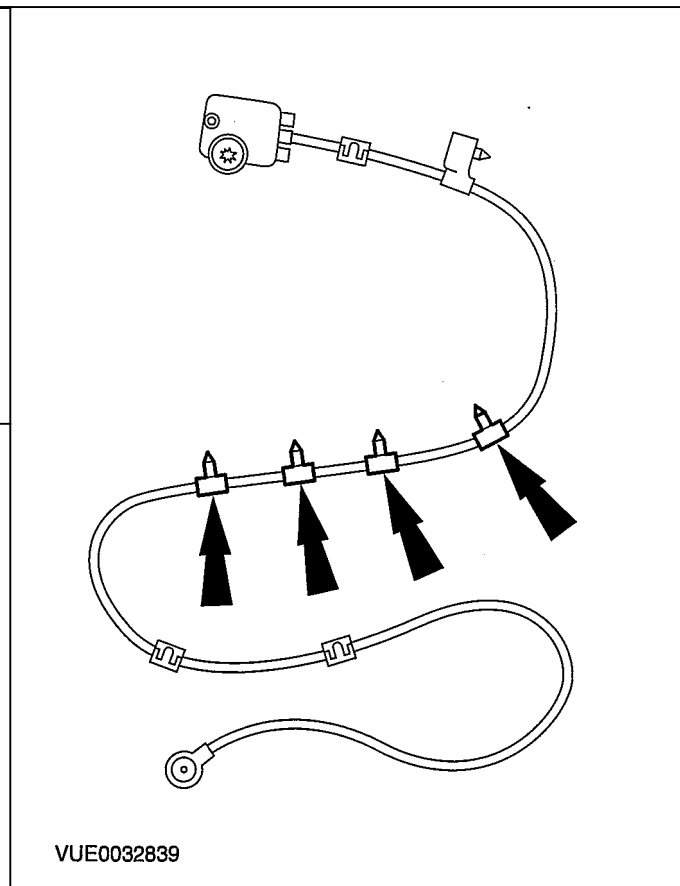
REMOVAL AND INSTALLATION

25. Attach a suitable draw cord to the antenna base end of the antenna cable.

Remove and discard the retaining clips from the antenna cable.



26. Pull the antenna cable along the roof panel towards the A-pillar to expose the suitable draw cord .
27. Attach the second suitable draw cord to the audio unit end of the antenna cable and pull the cable from behind the instrument panel to expose the connector and the draw cord.
28. Detach the suitable draw cords and remove the antenna cable.

**Installation**

1. **NOTE:**When installing a new antenna cable, some of the retaining clips are not required.

2. To install, reverse the removal procedure.

(1



SECTION 417-01 Exterior Lighting

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

SPECIFICATIONS

Specifications.....	417-01-3
---------------------	----------

DESCRIPTION AND OPERATION

Exterior Lighting.....	417-01-4
Front lighting.....	417-01-4
Rear lighting.....	417-01-6
Rear lighting - Fiesta built from 0812005.....	417-01-7
Autolamps - vehicles built from 0812005.....	417-01-8

DIAGNOSIS AND TESTING

Headlamps — Vehicles Built Up To: 1012005.....	417-01-9
Inspection and Checking.....	417-01-9
Symptom Chart.....	417-01-9
System Checks.....	417-01-10
Headlamps — Vehicles Built From: 1012005.....	417-01-32
Inspection and Checking.....	417-01-32
Symptom Chart.....	417-01-32
System Checks.....	417-01-33
Stoplamps.....	417-01-67
Inspection and Checking.....	417-01-67
Symptom Chart.....	417-04-67
System Checks.....	417-01-68
Turn Signal and Hazard Lamps.....	417-01-82
Inspection and Checking.....	417-01-82
Symptom Chart.....	417-01-82
System Check.....	417-01-83
Parking, Rear and License Plate Lamps.....	417-01-119
Inspection and Checking.....	417-01-119
Symptom Chart.....	417-01-119
System Checks.....	417-01-120
Reversing Lamps — Vehicles Built Up To: 1012005.....	417-01-141
Inspection and Checking.....	417-01-141
Symptom Chart.....	417-01-141
System Checks.....	417-01-142
Reversing Lamps — Vehicles Built From: 1012005.....	417-01-159
Inspection and Checking.....	417-01-159
Symptom Chart.....	417-01-159
System Checks.....	417-01-160
Fog Lamps.....	417-01-172
Inspection and Checking.....	417-01-172
Symptom Chart.....	417-01-172
System Checks.....	417-01-172
Headlamp Leveling.....	417-01-200

Inspection and Checking	417-01-200
Symptom Chart	417-01-200
System Checks	417-01-200

GENERAL PROCEDURES

Headlamp Adjustment.....	(32 113 0)	417-01-208
Headlamp Masking — Vehicles Built Up To: 1012005.....		417-01-209
Headlamp Masking — Vehicles Built From: 1012005.....		417-01-215
Front Fog Lamp Adjustment.....		417-01-221

REMOVAL AND INSTALLATION

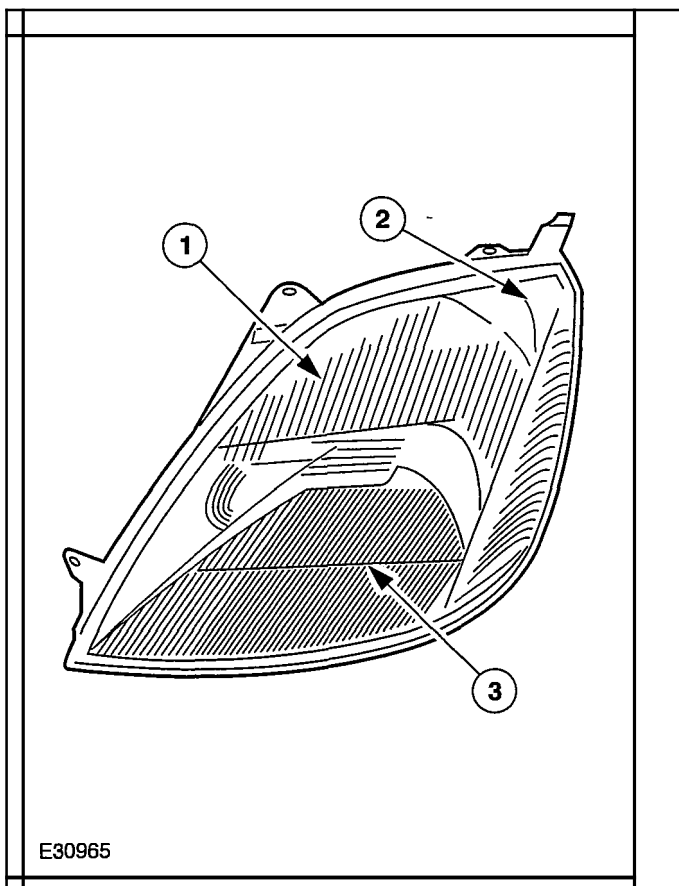
Front Fog Lamp — Vehicles Built Up To: 1112004.....	(32 281 0)	417-01-222
Front Fog Lamp — Vehicles Built From: 1112004.....	(32 281 0)	417-01-223
Headlamp Switch.....	(35 514 0)	417-01-224
Headlamp Assembly.....	(32 115 0)	417-01-225
Rear Lamp Assembly — Vehicles Built Up To: 1012005.....	(32 305 0)	417-01-227

SPECIFICATIONS**Exterior Lighting**

Component	Design
Headlamps	Complex reflector system, aligned by positioning the reflector
Fog lamps	Reflector system, aligned by positioning the reflector

Headlamps - Align (both sides)

Component	X value
Headlamps	$X = 10 \text{ cm}/10 \text{ m} = 0.34' = 1,0 \%$
Fog lamps	$X = 22 \text{ cm}/10 \text{ m} = 1.16' = 2,2 \%$

DESCRIPTION AND OPERATION**Exterior Lighting****Front lighting****Front headlamps**

The headlamps form a unit with the front turn signal lamps and the side lamps. They are made entirely of plastic and can only be replaced as a whole unit.

The motors for the electric headlamp leveling system are integrated in the headlamp unit.

The reflectors are free shape reflectors. The free shape technology allows the full reflector to be utilized.

In this technology, every point of the freely calculated reflector is allocated to illuminating a certain part of the road in front of the vehicle. As a result it is possible to optimize the light distribution through the form of the reflector alone.

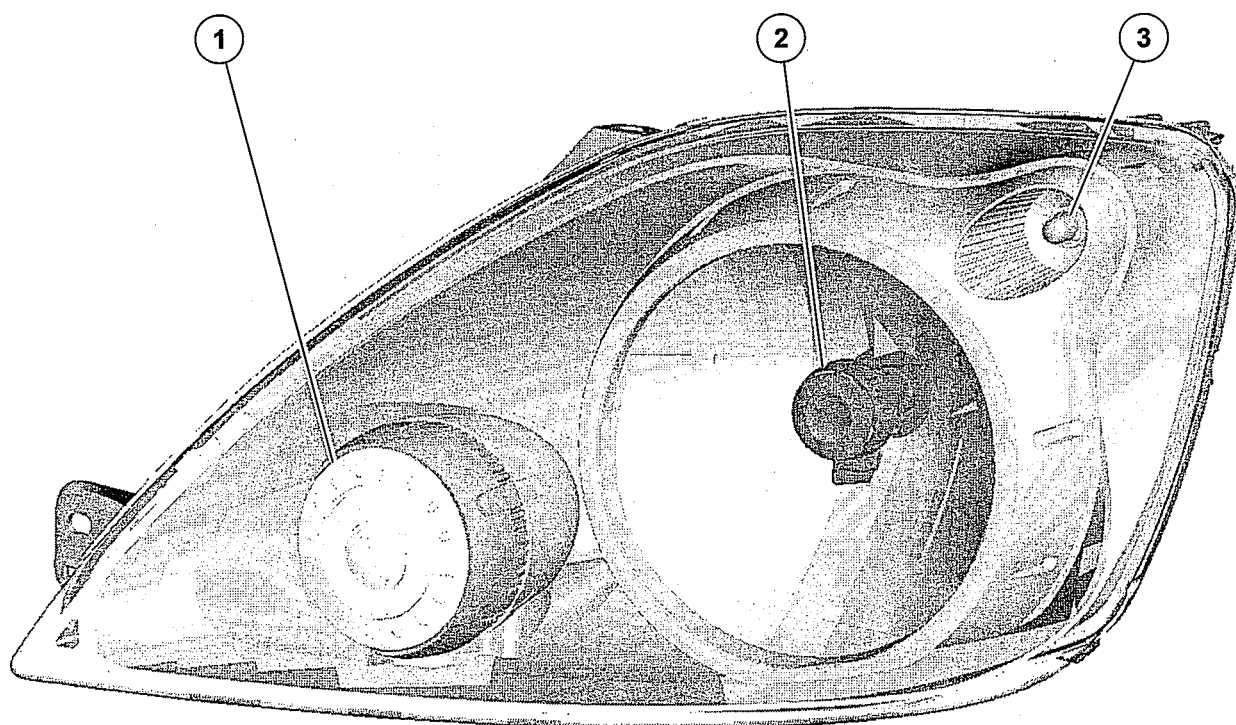
The plastic cover is only there for protection.

Conventional H4 bulbs are used in the main headlamps.

The turn signal lamps are yellow and have a special base in order to prevent any confusion.

Glass base bulbs are used for the side lamps.

Item	Description
1	Turn signal lamp
2	Side lamp
3	Main headlamp

DESCRIPTION AND OPERATION**Front headlamp - Fiesta built from 08/2005**

E64275

Item	Description
1	Turn signal lamp
2	Main headlamp
3	Side lamp

The headlamps form a unit with the front turn signal lamps and the side lamps. They are made entirely of plastic and can only be replaced as a whole unit.

The motors for the electric headlamp leveling system are integrated in the headlamp unit.

The reflectors are free shape reflectors. The free shape technology allows the full reflector to be utilized.

In this technology, every point of the freely calculated reflector is allocated to illuminating a certain part of the road in front of the vehicle. As a result it is possible to optimize the light distribution through the form of the reflector alone.

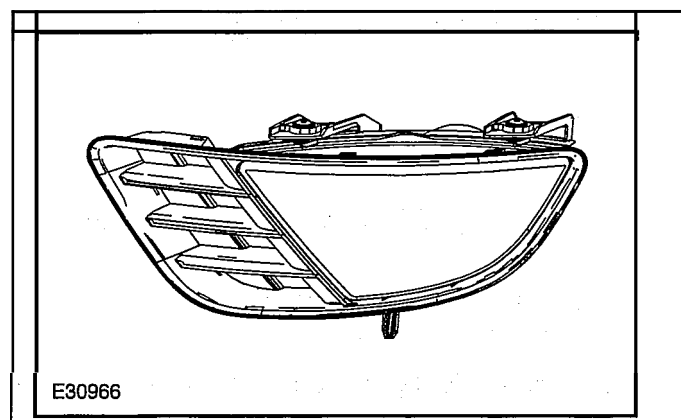
The plastic cover is only there for protection.

Conventional H4 bulbs are used in the main headlamps.

The turn signal lamps are integrated in the headlamps and have their own reflector with a yellow plastic cover. Colorless bulbs are used.

Glass base bulbs are used for the side lamps.

The headlamp must be removed in order to replace the bulbs.

Front fog lamps

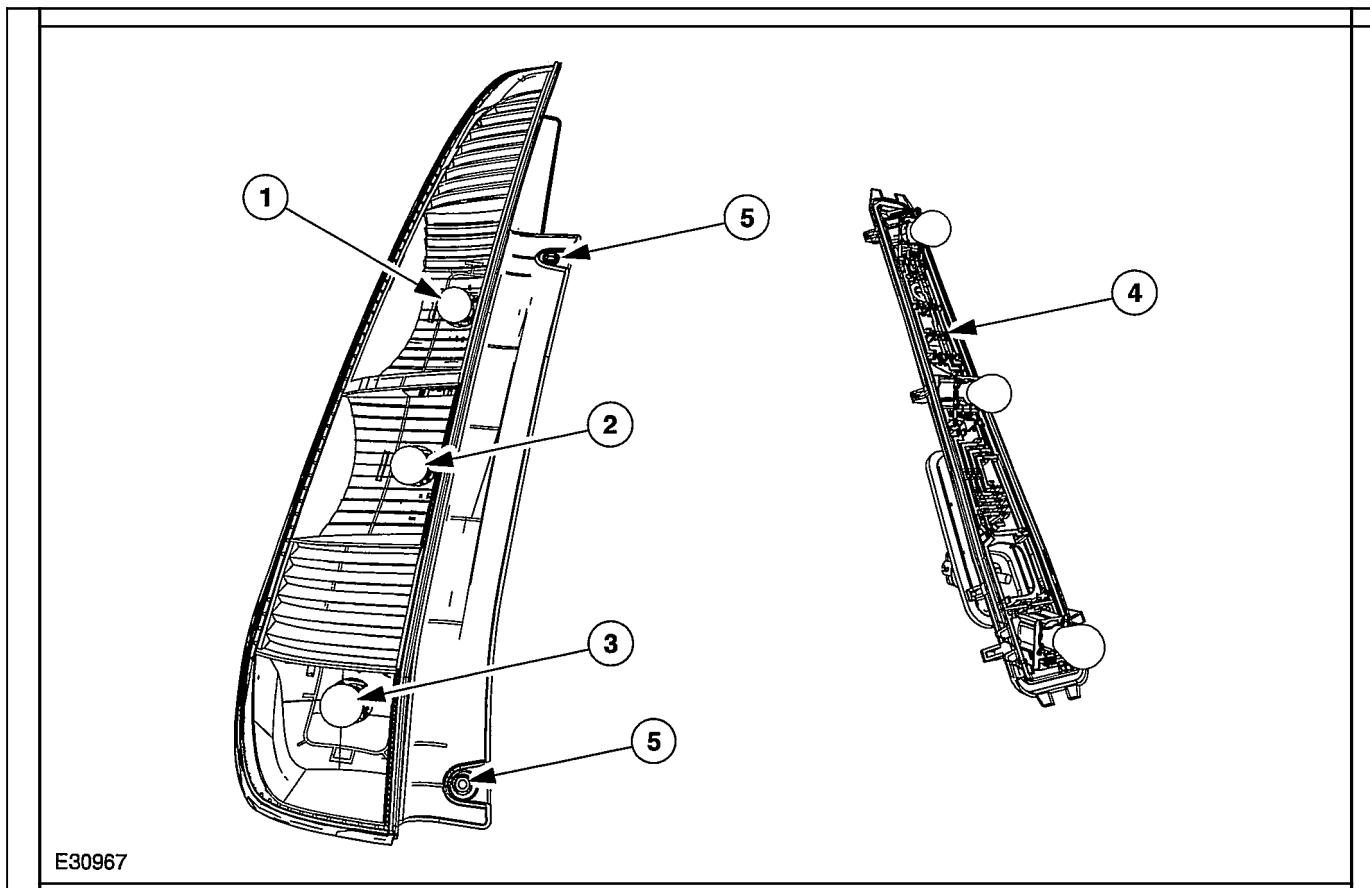
E30966

The fog lights are mounted in the lower part of the front bumper.

H11 bulbs are used.

DESCRIPTION AND OPERATION

Rear lighting



Item	Description
1	Stop/side lamp
2	Turn signal lamp
3	Rear fog lamp
4	Bulb carrier
5	Securing bolts

As well as the rear lamps, the rear lamp clusters incorporate all rearward facing lights with exception of the license plate lamp and the additional high-mounted stoplamp.

The rear lamps can only be replaced as a complete unit.

They incorporate a bulb carrier with the bulb sockets.

The bulb carrier is connected to the wiring harness via a compact connector.

The rear lamp cluster should be detached from the vehicle before replacing any bulbs.

Side lamp

The side lamp is a combined bulb which also includes the stoplamp.

Stoplamp

The additional high-mounted **stoplamp** is mounted in the middle of the tailgate above the rear window and also incorporates the washer nozzle for the rear window. A glass base bulb is used.

The stoplamps are switched on via the **stoplamp** switch on the brake pedal as soon as the brake pedal is actuated.

Turn signal lamps

The turn signal lamps serve as direction indicators and for the hazard warning lights. A yellow bulb is used.

DESCRIPTION AND OPERATION

The function of the turn signal lamps is controlled by the GEM, as a result of which the conventional turn signal/hazard warning relay is no longer required.

The sound generator for the acoustic turn signal check is integrated in the multifunction switch.

Reversing lamp

The reversing lamp serves to illuminate the road when reversing and is switched on by the reversing lamp switch when reverse gear is engaged.

There is only a reversing lamp on the passenger side of the vehicle, i.e. on the right-hand side for a LHD vehicle and on the left-hand side for a RHD vehicle.

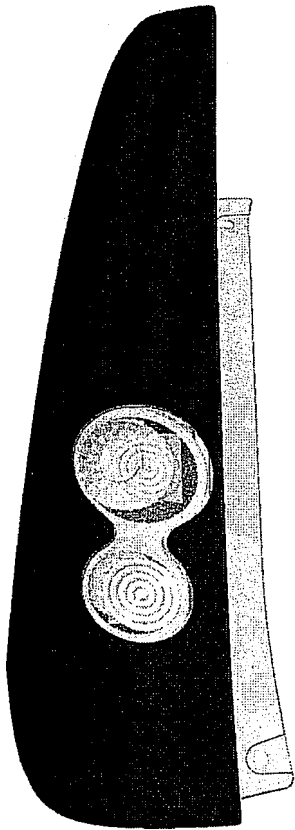
Rear fog lamp

The rear fog lamp serves for greater visibility of the vehicle from behind for following road users and can only be switched on when at least the side lamps are switched on.

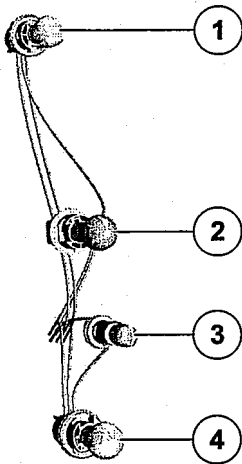
This is achieved via the mechanical design of the light switch, which will only allow the lever to be pulled if it was moved to at least "P" beforehand.

The rear fog lamp is always installed on the driver's side, i.e. on the opposite side to the reversing lamp

Rear lighting - Fiesta built from 0812005



E64276



Item	Description
1	Stop/side lamp
2	Turn signal lamp
3	Reversing lamp
4	Rear fog lamp

The rear lamps can only be replaced as a complete unit.

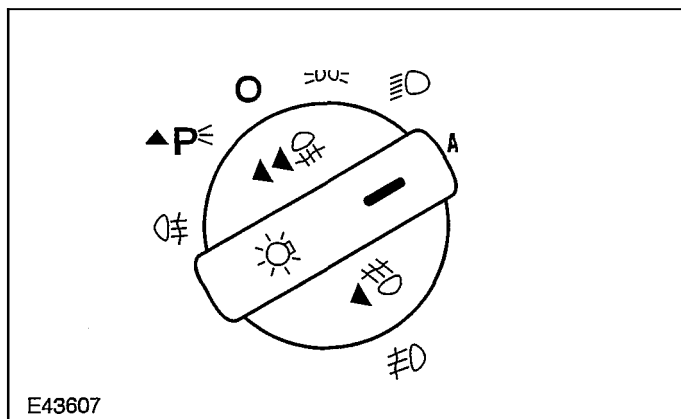
They contain individual holders for the bulbs.

The holders are connected to the wiring harnesses via individual connectors.

DESCRIPTION AND OPERATION

The rear lamp cluster should be detached from the vehicle before replacing any bulbs.

Autolamps - vehicles built from 08/2005

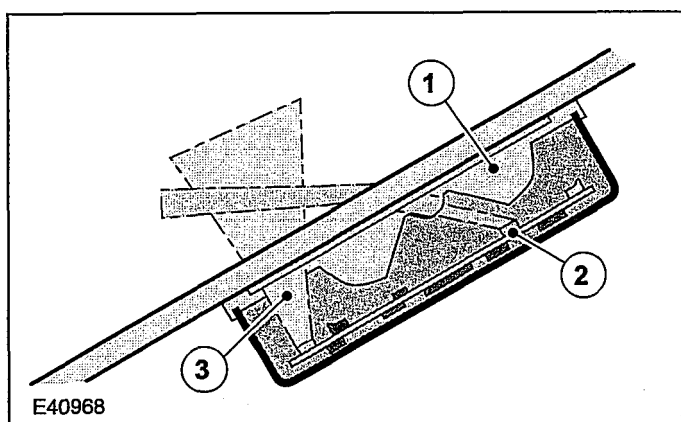


The low beam headlamps and side lamps are switched on automatically if all of the following conditions are satisfied:

- Ignition switch in the "II" or "III" position
- Light switch in the "AUTO" position
- Determined ambient light conditions below a stored threshold value

The low beam and the side lamps are switched on or off by the Generic Electronic Module (GEM) according to the input signals of the combined rain sensor/light sensor. This takes place in the GEM by activating the low beam relay and the autolamp relay (side lamps/license plate lamps).

Combined rain sensor/light sensor - vehicles built from 08/2005



Item	Description
1	Lens
2	Front light sensor
3	Ambient light sensor

The combined rain sensor/light sensor is attached to the windshield, near to the interior rear view mirror.

The ambient light sensor determines the general light intensity. For this purpose, it records the light over as wide an angle as possible, without taking the direction of incidence into account.

The front light sensor determines the light intensity directly in front of the vehicle.

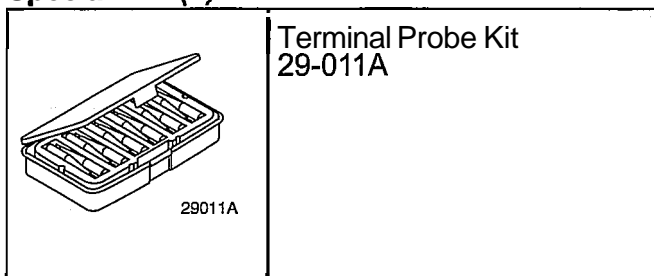
If both the ambient light sensor and the front light sensor detect a sudden reduction in light intensity at the same time, then an algorithm-based calculation is used to determine the fact that the vehicle has entered a tunnel.

In this case the request for switching on the external lighting and the indicator lamp in the instrument cluster is transmitted to the GEM.

If the sun is shining and the vehicle is suddenly thrown into the shade by a large truck, the two sensors will register different light intensities. In this case, the algorithm-based calculation will not result in the lights being switched on.

DIAGNOSIS AND TESTING**Headlamps — Vehicles Built Up To: 1012005**

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)

Terminal Probe Kit
29-011A

Visual Inspection Chart

Electrical system
<ul style="list-style-type: none"> • Fuse(s) • Lamp(s) • Connector(s) • Switches • Wiring harness

Inspection and Checking

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.
4. If the concern is not visually evident, refer to the Symptom Chart.

Symptom Chart**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> • Dipped beam and main beam are inoperative 	<ul style="list-style-type: none"> • Fuse • Circuit(s) • Headlamp switch • Turn signal switch • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test A.
<ul style="list-style-type: none"> • The dipped beam is inoperative 	<ul style="list-style-type: none"> • Circuit(s) • Dipped beam relay • Turn signal switch • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test B.
<ul style="list-style-type: none"> • The main beam is inoperative 	<ul style="list-style-type: none"> • Circuit(s) • Main beam relay • Turn signal switch • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test C.
<ul style="list-style-type: none"> • One dipped beam is inoperative 	<ul style="list-style-type: none"> • Fuse • Circuit(s) • Left/right-hand headlamp • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test D.
<ul style="list-style-type: none"> • One main beam is inoperative 	<ul style="list-style-type: none"> • Fuse • Circuit(s) • Left/right-hand headlamp • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test E.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
• The headlamps illuminate continuously	<ul style="list-style-type: none"> • Circuit(s) • Dipped beam relay • Main beam relay • Turn signal switch • Headlamp switch • Instrument cluster • Central junction box (CJB) 	• GO to Pinpoint Test F.
• The headlamp flasher is inoperative	<ul style="list-style-type: none"> • Circuit(s) • Turn signal switch 	• GO to Pinpoint Test G.
• The main beam warning lamp is inoperative	<ul style="list-style-type: none"> • Circuit(s) • Instrument cluster 	• REFER to: Instrument Cluster - Vehicles Built Up To: 1012005 (413-01 Instrument Cluster, Diagnosis and Testing).

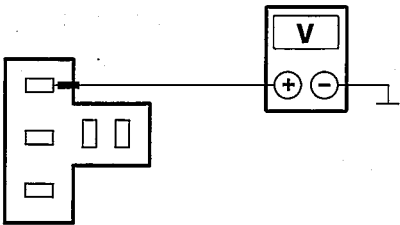
System Checks

NOTE: Use a digital multimeter for all electrical measurements.

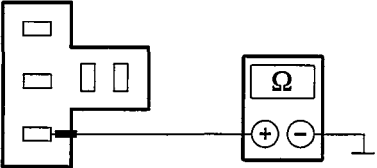
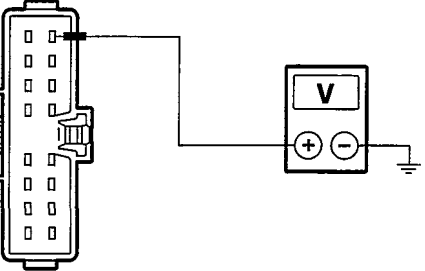
PINPOINT TEST A : DIPPED BEAM AND MAIN BEAM INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK FUSE F40 (CJB)	
	<input checked="" type="checkbox"/> Ignition switch in position 0.
	<input type="checkbox"/> CHECK fuse F40 (10 A) (CJB). <ul style="list-style-type: none"> • Is the fuse OK? → Yes GO to A2. → No INSTALL A NEW fuse F40 (10 A) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
A2: CHECK THE VOLTAGE AT FUSE F40 (CJB)	
	<input checked="" type="checkbox"/> Connect fuse F40 (10 A) (CJB).
	<input checked="" type="checkbox"/> Ignition switch in position II.

DIAGNOSIS AND TESTING

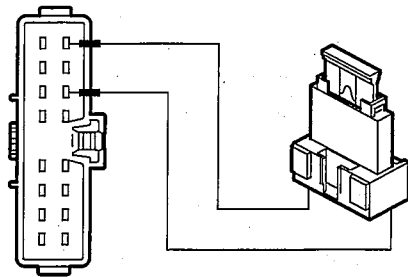
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Measure the voltage between fuse F40 (10 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A3.</p> <p>→ No LOCATE and RECTIFY the break in the voltage supply to fuse F40 (CJB) using the Wiring Diagrams, if necessary CHECK and INSTALL A NEW CJB. CHECK the operation of the system.</p>
A3: CHECK THE VOLTAGE AT THE DIPPED BEAM RELAY	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect dipped beam relay from socket C417.</p> <p>3 Ignition switch in position II.</p> <p>4 SWITCH ON dipped beam</p>
 <p>VFE0033861</p>	<p>5 Measure the voltage between the dipped beam relay, socket C417, pin 1, circuit 15S-LE19 (GN/BU), CJB side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A4.</p> <p>→ No GO to A5.</p>
A4: CHECK THE GROUND CONNECTION OF THE DIPPED BEAM RELAY AND THE MAIN BEAM RELAY	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033862</p>	<p>2 Measure the resistance between the dipped beam relay, socket C417, pin 2, circuit 31-LE19 (BK), CJB side and ground.</p> <ul style="list-style-type: none"> Is less than 2 ohms measured? <p>→ Yes LOCATE and RECTIFY the break in the circuit 30-DB1 (RD), between fuse FE (BJB) and the CJB using the Wiring Diagrams, CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY break in circuit 31-DA12 (BK), between soldered connection S15 and ground G13 using the Wiring Diagrams. CHECK the operation of the system.</p>
A5: CHECK THE VOLTAGE AT THE HEADLAMP SWITCH	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect headlamp switch from connector C338.</p>
 <p>VFE0001471</p>	<p>3 Measure the voltage between the headlamp switch, connector C338, pin 8, circuit 15-LE29 (GN/BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A6.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F40 (CJB) and the headlamp switch using the Wiring Diagrams. CHECK the operation of the system.</p>
A6: CHECK THE HEADLAMP SWITCH	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Connect dipped beam relay to socket C417.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0016100

DETAILS/RESULTS/ACTIONS

- 3 Using a fused test cable (10 A) at the headlamp switch, bridge between connector C338, pin 8, circuit 15-LE29 (GN/BK) and pin 6, circuit 15S-LE14 (GN/RD), wiring harness side.

- 4 Ignition switch in position II.

- 5 Check the operation of the dipped beam.

- Does the dipped beam illuminate?

→ **Yes**

INSTALL A NEW headlamp switch. CHECK the operation of the system.

→ **No**

GO to A7.

A7: CHECK THE VOLTAGE AT THE TURN SIGNAL SWITCH

- 1 Ignition switch in position 0.

- 2 Connect headlamp switch to connector C338.

- 3 Disconnect turn signal switch from connector C357.

- 4 Ignition switch in position II.

- 5 SWITCH ON dipped beam

- 6 Measure the voltage between turn signal switch, connector C357, pin 8, circuit 15S-LE14 (GN/RD), wiring harness side and ground.

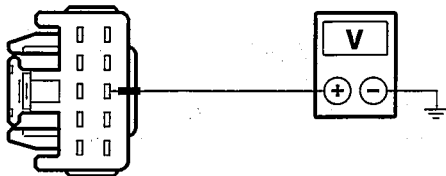
- Does the meter display battery voltage?

→ **Yes**

INSTALL A NEW turn signal switch. CHECK the operation of the system.

→ **No**

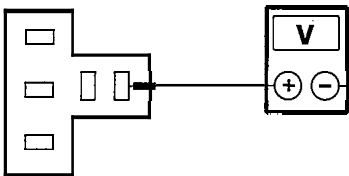
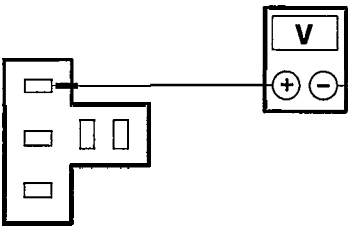
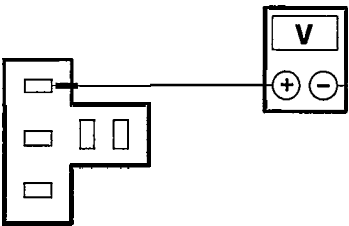
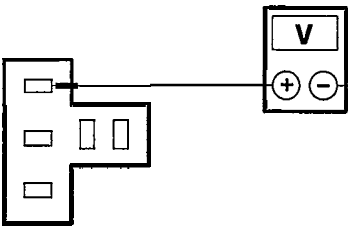
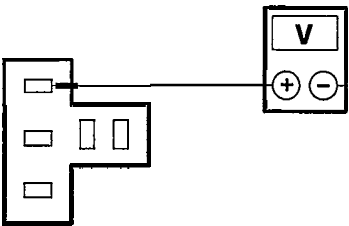
LOCATE and RECTIFY the break in the circuit between the headlamp switch and the turn signal switch using the Wiring Diagrams. CHECK the operation of the system.



VFE0000204

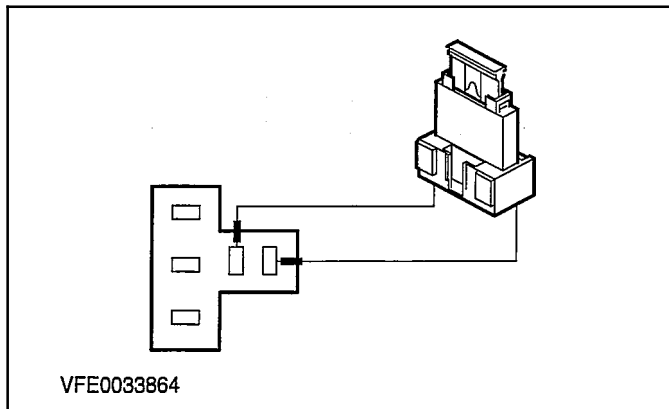
DIAGNOSIS AND TESTING

PINPOINT TEST B : THE DIPPED BEAM IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: TEST THE VOLTAGE AT THE DIPPED BEAM RELAY (POWER CIRCUIT)	
 VFE0033863	<input type="checkbox"/> Ignition switch in position 0.
	2 Disconnect dipped beam relay from socket C417.
	3 Ignition switch in position II.
 VFE0033861	<input type="checkbox"/> Measure the voltage between the dipped beam relay, socket C417, pin 3, circuit 30-LE20 (RD), CJB side and ground. <ul style="list-style-type: none">Does the meter display battery voltage?<ul style="list-style-type: none">→ Yes GO to B2.→ No LOCATE and RECTIFY the break in the circuit between the CJB and the dipped beam relay using the Wiring Diagrams, INSTALL A NEW CJB if necessary. CHECK the operation of the system.
B2: CHECK THE VOLTAGE AT THE DIPPED BEAM RELAY (CONTROL CIRCUIT)	
 VFE0033861	1 SWITCH ON dipped beam.
	<input type="checkbox"/> Measure the voltage between the dipped beam relay, socket C417, pin 1, circuit 15S-LE19 (GN/BU), CJB side and ground. <ul style="list-style-type: none">Does the meter display battery voltage?<ul style="list-style-type: none">→ Yes GO to B3.→ No GO to B5.
 VFE0033861	
B3: CHECK THE POWER CIRCUIT OF THE DIPPED BEAM RELAY FOR OPEN CIRCUIT	
 VFE0033861	1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2** Connect a fused jumper wire (20 A) at the dipped beam relay, socket C417, between pin 3 circuit 30-LE20 (RD) and pin 5, circuit 15S-DB7 (GNNE), CJB side.

- 3** Ignition switch in position II.

- 4** Check the dipped beam.

- Does the dipped beam illuminate?

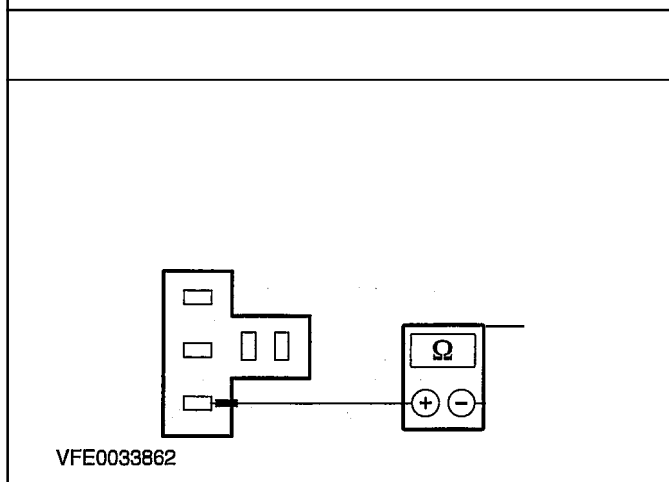
→ **Yes**

GO to B4.

→ **No**

LOCATE and RECTIFY the break in the circuit between the dipped beam relay and the bridge (CJB) using the Wiring Diagrams, INSTALL A NEW CJB if necessary. CHECK the operation of the system.

B4: CHECK THE GROUND CONNECTION OF THE DIPPED BEAM RELAY



- 1** Ignition switch in position 0.

- 2** Measure the resistance between the dipped beam relay, socket C417, pin 2, circuit 31-LE19 (BK), CJB side and ground.

- Is less than 2 ohms measured?

→ **Yes**

INSTALL A NEW dipped beam relay. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the dipped beam relay and soldered connection S15 using the Wiring Diagrams. CHECK the operation of the system.

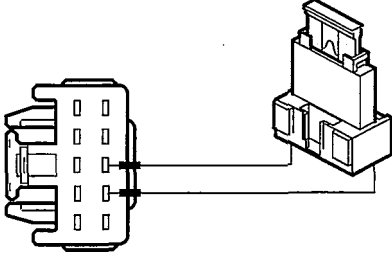
B5: CHECK TURN SIGNAL SWITCH

- 1** Ignition switch in position 0.

- ☐ Disconnect turn signal switch from connector C357.

- 3** Connect dipped beam relay to socket C417.

DIAGNOSIS AND TESTING

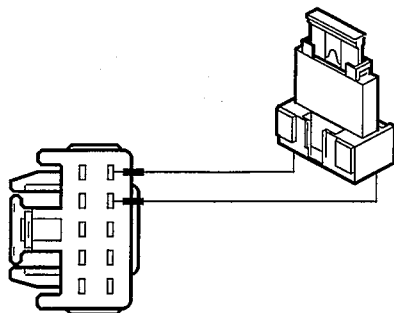
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0016101</p>	<p>4 Connect a fused jumper wire (10 A) at the turn signal switch, connector C357, between pin 8, circuit 15S-LE14 (GN/RD) and pin 9, circuit 15S-LE19 (GN/BU), wiring harness side.</p>
	<p>5 Ignition switch in position II.</p> <p>6 SWITCH ON dipped beam.</p> <p>7 Check the dipped beam.</p> <ul style="list-style-type: none"> Does the dipped beam illuminate? <p>→ Yes INSTALL A NEW turn signal switch. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the turn signal switch and the dipped beam relay using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST C : THE MAIN BEAM IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C1: CHECK THE MAIN BEAM WARNING LAMP	
	<p>___ Ignition switch in position II.</p> <p>2 SWITCH ON main beam.</p> <p><input type="checkbox"/> Check the main beam warning lamp.</p> <ul style="list-style-type: none"> Does the main beam warning lamp illuminate? <p>→ Yes GO to C3.</p> <p>→ No GO to C2.</p>
C2: CHECK TURN SIGNAL SWITCH	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect turn signal switch from connector C357.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0016107

DETAILS/RESULTS/ACTIONS

- ☐ Connect a fused jumper wire (10 A) at the turn signal switch, connector C357, between pin 6, circuit 15-LE14 (GN/RD) and pin 7, circuit 15S-LE12A (GNNE), wiring harness side.

4 Ignition switch in position II.

5 Check main beam.

- Does the main beam illuminate?

→ **Yes**

INSTALL A NEW turn signal switch. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the turn signal switch and soldered connection S274 using the Wiring Diagrams. CHECK the operation of the system.

C3: CHECK THE VOLTAGE AT THE MAIN BEAM RELAY (CONTROL CIRCUIT)

☐ Ignition switch in position 0.

2 Disconnect main beam relay from socket C411.

3 Ignition switch in position II.

4 SWITCH ON main beam.

☒ Measure the voltage between the main beam relay, socket C411, pin 1, circuit 15S-LE12 (GNNE), CJB side and ground.

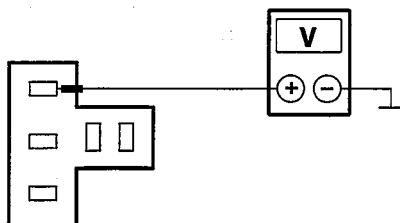
- Does the meter display battery voltage?

→ **Yes**

GO to C4.

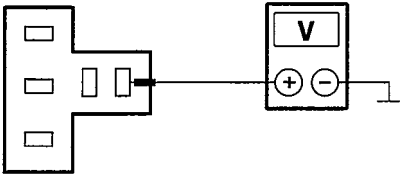
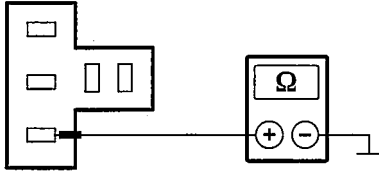
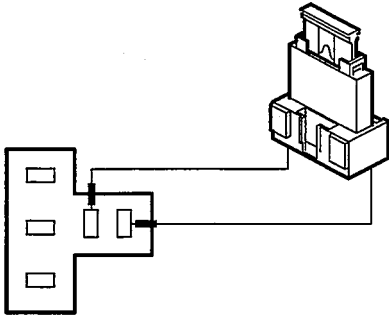
→ **No**

LOCATE and RECTIFY the break in the circuit between soldered connection S274 and the main beam relay using the Wiring Diagrams, INSTALL A NEW CJB if necessary. CHECK the operation of the system.



VFE0033861

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>C4: TEST THE VOLTAGE AT THE MAIN BEAM RELAY (POWER CIRCUIT)</p>  <p>VFE0033863</p>	<p>1 Measure the voltage between the main beam relay, socket C411, pin 3, circuit 30-LEI3 (RD), CJB side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to C5.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the CJB (bridge) and the main beam relay using the Wiring Diagrams, INSTALL A NEW CJB if necessary. CHECK the operation of the system.</p>
<p>C5: CHECK THE GROUND CONNECTION OF THE MAIN BEAM RELAY</p>  <p>VFE0033862</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the main beam relay, socket C411, pin 2, circuit 31-LEI2 (BK), CJB side and ground.</p> <ul style="list-style-type: none"> Is less than 2 ohms measured? <p>→ Yes GO to C6.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the main beam relay and soldered connection S15 using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>C6: CHECK THE POWER CIRCUIT OF THE MAIN BEAM RELAY FOR OPEN CIRCUIT</p>  <p>VFE0033864</p>	<p>1 Ignition switch in position 0.</p> <p>2 Connect a fused jumper wire (20 A) at the main beam relay, socket C411, between pin 3 circuit 30-LEI3 (RD) and pin 5, circuit 15S-DB6 (GN/WH), CJB side.</p> <p>3 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

	<p>4 Check main beam.</p> <ul style="list-style-type: none"> Does the main beam illuminate? <p>→ Yes INSTALL A NEW main beam relay. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the main beam relay and the CJB (bridge) using the Wiring Diagrams, INSTALL A NEW CJB if necessary. CHECK the operation of the system.</p>
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PINPOINT TEST D : ONE DIPPED BEAM IS INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D1: DETERMINE THE FAULT CONDITION

	1 Ignition switch in position II.
	2 SWITCH ON dipped beam
	<p>3 Determine the fault condition.</p> <ul style="list-style-type: none"> Is the left-hand dipped beam inoperative? <p>→ Yes GO to D2.</p> <p>→ No The right-hand dipped beam is inoperative: GO to D6.</p>

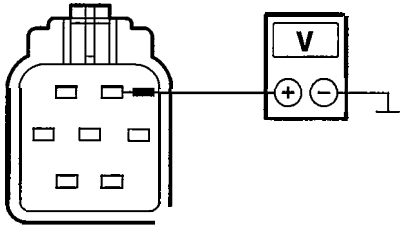
D2: CHECK FUSE F9 (CJB)

	1 Ignition switch in position 0.
	<p>2 CHECK fuse F9 (10 A) (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to D3.</p> <p>→ No INSTALL A NEW fuse F9 (10 A). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>

D3: CHECK THE VOLTAGE AT FUSE F9 (CJB)

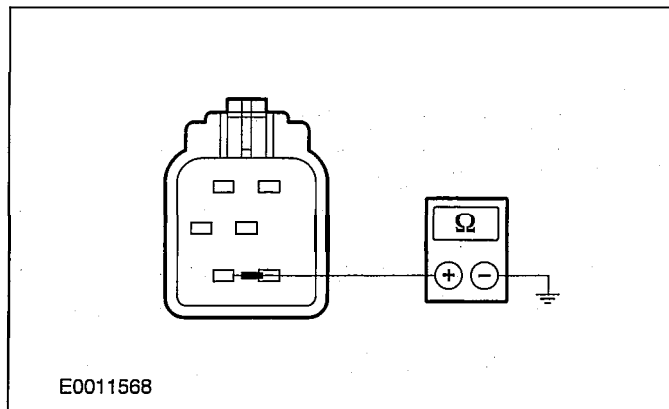
	<input type="checkbox"/> Connect fuse F9 (10 A) (CJB).
	2 Ignition switch in position II.
	3 SWITCH ON dipped beam

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>4 Measure the voltage between fuse F9 (10 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to D4.</p> <p>→ No LOCATE and RECTIFY the break in the voltage supply to fuse F9 (CJB) using the Wiring Diagrams, if necessary CHECK and INSTALL A NEW CJB. CHECK the operation of the system.</p>
D4: CHECK VOLTAGE AT THE LEFT-HAND HEADLAMP	
	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect left-hand headlamp from connector C416.</p> <p>3 Ignition switch in position II.</p> <p>4 SWITCH ON dipped beam.</p>
 <p>VFE0016224</p>	<p>5 Measure the voltage between left-hand headlamp, connector C416, pin 2, circuit 15S-LE16 (GN/OG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>+ Yes GO to D5.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F9 (CJB) and the headlamp using the Wiring Diagrams. CHECK the operation of the system.</p>
D5: CHECK GROUND CONNECTION OF THE LEFT-HAND HEADLAMP	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between left-hand headlamp, connector C416, pin 6, circuit 31-LE31 (BK), wiring harness side and ground.
 - Is less than 2 ohms measured?
 - **Yes**
CHECK and if necessary INSTALL A NEW left-hand headlamp. CHECK the operation of the system.
 - **No**
LOCATE and RECTIFY the break in the circuit between the headlamp and soldered connection S10 using the Wiring Diagrams. CHECK the operation of the system.

D6: CHECK FUSE F10 (CJB)

- 1 Ignition switch in position 0.
- 2 CHECK fuse F10 (10 A) (CJB).
 - Is the fuse OK?
 - **Yes**
GO to D7.
 - **No**
INSTALL A NEW fuse F10 (10 A). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.

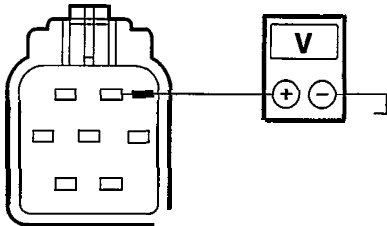
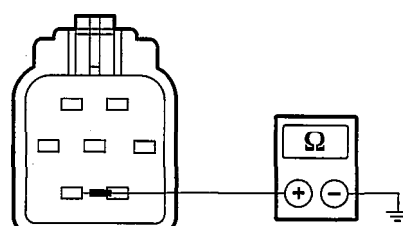
D7: CHECK THE VOLTAGE AT FUSE F10 (CJB)

- ☐ Connect fuse F10 (10 A) (CJB).
- 2 Ignition switch in position II.
- ☐ SWITCH ON dipped beam
- 4 Measure the voltage between fuse F10 (10 A) and ground.
 - Does the meter display battery voltage?
 - **Yes**
GO to D8.
 - **No**
LOCATE and RECTIFY the break in the voltage supply to the fuse using the Wiring Diagrams, if necessary CHECK and INSTALL A NEW CJB. CHECK the operation of the system.

D8: CHECK VOLTAGE AT THE RIGHT-HAND HEADLAMP

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0016224</p>	<div> <input type="checkbox"/> Disconnect right-hand headlamp from connector C422. </div> <div> <input type="checkbox"/> Ignition switch in position II. </div> <div> <input type="checkbox"/> SWITCH ON dipped beam. </div> <p>Measure the voltage between right-hand headlamp, connector C422, pin 2, circuit 15S-LE23 (GN/WH), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to D9.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F10 (CJB) and the headlamp using the Wiring Diagrams. CHECK the operation of the system.</p>
D9: CHECK GROUND CONNECTION OF THE RIGHT-HAND HEADLAMP	
 <p>E0011568</p>	<div> <input type="checkbox"/> Ignition switch in position 0. </div> <div> <input type="checkbox"/> Measure the resistance between right-hand headlamp, connector C422, pin 6, circuit 31-LE30 (BK), wiring harness side and ground. </div> <ul style="list-style-type: none"> Is less than 2 ohms measured? <p>→ Yes CHECK and if necessary INSTALL A NEW right-hand headlamp. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the headlamp and soldered connection S11 using the Wiring Diagrams. CHECK the operation of the system.</p>

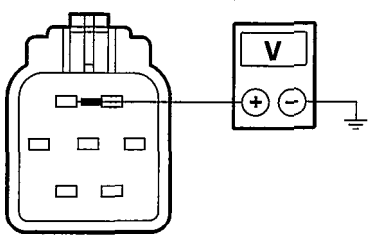
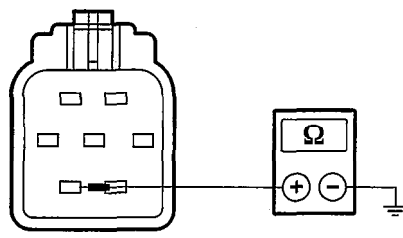
PINPOINT TEST E : ONE MAIN BEAM IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: DETERMINE THE FAULT CONDITION	
	<div> <input type="checkbox"/> Ignition switch in position II. </div> <div> <input type="checkbox"/> SWITCH ON main beam. </div>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> Determine the fault condition. <ul style="list-style-type: none"> Is the left-hand main beam inoperative? <ul style="list-style-type: none"> → Yes GO to E2. → No The right-hand main beam is inoperative: GO to E6.
E2: CHECK FUSE F52 (CJB)	
	<input type="checkbox"/> Ignition switch in position 0. <input type="checkbox"/> CHECK fuse F52 (10 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK? <ul style="list-style-type: none"> → Yes GO to E3. → No INSTALL A NEW fuse F52 (10 A). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
E3: CHECK THE VOLTAGE AT FUSE F52 (CJB)	
	<input type="checkbox"/> 1 Connect fuse F52 (10 A) (CJB). <input type="checkbox"/> 2 Ignition switch in position II. <input type="checkbox"/> 3 SWITCH ON main beam. <input type="checkbox"/> 4 Measure the voltage between fuse F52 (10 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? <ul style="list-style-type: none"> → Yes GO to E4. → No LOCATE and RECTIFY the break in the voltage supply to fuse F52 (CJB) using the Wiring Diagrams, if necessary CHECK and INSTALL A NEW CJB. CHECK the operation of the system.
E4: CHECK VOLTAGE AT THE LEFT-HAND HEADLAMP	
	<input type="checkbox"/> Ignition switch in position 0. <input type="checkbox"/> Disconnect left-hand headlamp from connector C416. <input type="checkbox"/> Ignition switch in position II. <input type="checkbox"/> 4 SWITCH ON main beam.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSRESULTSIACTIONS
 <p>E0011505</p>	<p>5 Measure the voltage between left-hand headlamp, connector C416, pin 1, circuit 15S-LE15 (GN/BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to E5.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F52 (CJB) and the left headlamp using the Wiring Diagrams. CHECK the operation of the system.</p>
E5: CHECK GROUND CONNECTION OF THE LEFT-HAND HEADLAMP	
 <p>E0011568</p>	<p>1 Ignition switch in position 0.</p> <p>Measure the resistance between left-hand headlamp, connector C416, pin 6, circuit 31-LE31 (BK), wiring harness side and ground.</p> <p>Is less than 2 ohms measured?</p> <p>→ Yes CHECK and if necessary INSTALL A NEW headlamp. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the headlamp and soldered connection S10 using the Wiring Diagrams. CHECK the operation of the system.</p>
E6: CHECK FUSE F53 (CJB)	
	<p>Ignition switch in position 0.</p> <p>CHECK fuse F53 (10 A) (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to E7.</p> <p>→ No INSTALL A NEW fuse F53 (10 A). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>
E7: CHECK THE VOLTAGE AT FUSE F53 (CJB)	
	<p>Connect fuse F53 (10 A) (CJB).</p> <p>Ignition switch in position II.</p> <p><input type="checkbox"/> SWITCH ON main beam.</p>

DIAGNOSIS AND TESTING

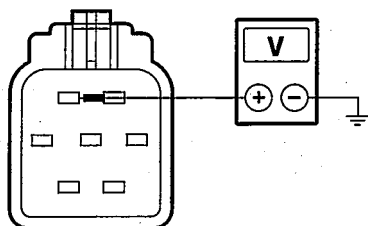
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between fuse F53 (10 A) and ground.
- Does the meter display battery voltage?
- **Yes**
GO to E8.
- **No**
LOCATE and RECTIFY the break in the voltage supply to fuse F53 (CJB) using the Wiring Diagrams, if necessary CHECK and INSTALL A NEW CJB. CHECK the operation of the system.

E8: CHECK VOLTAGE AT THE RIGHT-HAND HEADLAMP

- ☐ 1 Ignition switch in position 0.
- ☐ 2 Disconnect right-hand headlamp from connector C422.
- ☐ 3 Ignition switch in position II.
- ☐ 4 SWITCH ON main beam.



E0011505

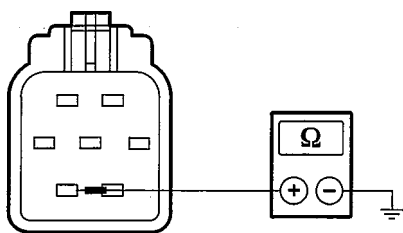
- ☐ 5 Measure the voltage between right-hand headlamp, connector C422, pin 1, circuit 15S-LE22 (GNIOG), wiring harness side and ground.
- Does the meter display battery voltage?
- **Yes**
GO to E9.
- **No**
LOCATE and RECTIFY the break in the circuit between fuse F53 (CJB) and the right-hand headlamp using the Wiring Diagrams. CHECK the operation of the system.

E9: CHECK GROUND CONNECTION OF THE RIGHT-HAND HEADLAMP

- ☐ 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E0011568

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between right-hand headlamp, connector C422, pin 6, circuit 31-LE30 (BK), wiring harness side and ground.
- Is less than 2 ohms measured?
- **Yes**
CHECK and if necessary INSTALL A NEW headlamp. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit between the headlamp and soldered connection S11 using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST F : THE HEADLAMPS ILLUMINATE CONTINUOUSLY

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

F1: DETERMINE THE FAULT CONDITION

- 1** Determine the fault condition.
- Is the main beam permanently switched on?
- **Yes**
GO to F7.
- **No**
Dipped beam permanently switched on: GO to F2.

F2: NARROW DOWN THE CAUSE OF THE SHORT TO BATTERY VOLTAGE

NOTE: Switch off dipped beam.

- 1** Ignition switch in position 0.
- 2** Disconnect dipped beam relay from socket C417.
- 3** Ignition switch in position II.
- ☐ Check the dipped beam.
- Does the dipped beam illuminate?
- **Yes**
GO to F3.
- **No**
GO to F4.

F3: NARROW DOWN THE CAUSE OF THE SHORT TO BATTERY VOLTAGE

- 1** Ignition switch in position 0.
- 2** Disconnect fuse F9 (10 A) (CJB).

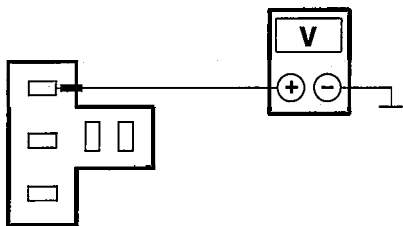
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

	<input checked="" type="checkbox"/> 3 Disconnect fuse F10 (10 A) (CJB).
	<input type="checkbox"/> Ignition switch in position II.
	<input checked="" type="checkbox"/> 5 Check the dipped beam. <ul style="list-style-type: none"> Does the dipped beam illuminate on one side? <p>→ Yes</p> <ul style="list-style-type: none"> Left-hand dipped beam illuminates: LOCATE and RECTIFY the short to battery voltage in circuit 15s-LE16 (GN/OG), which is connected to the output of fuse F9 (10 A) (CJB), using the Wiring Diagrams. CHECK the operation of the system. Right-hand dipped beam illuminates: LOCATE and RECTIFY the short to battery voltage in circuit 15S-LE23 (GN/WH), which is connected to the output of fuse F10 (10 A) (CJB), using the Wiring Diagrams. CHECK the operation of the system. <p>→ No</p> <p>LOCATE and RECTIFY the short to battery voltage in circuit 15S-DB7 (GNNE), between dipped beam relay and CJB, using the Wiring Diagrams, if necessary INSTALL A NEW CJB. CHECK the operation of the system.</p>

F4: CHECK THE VOLTAGE AT THE DIPPED BEAM RELAY (CONTROL CIRCUIT)

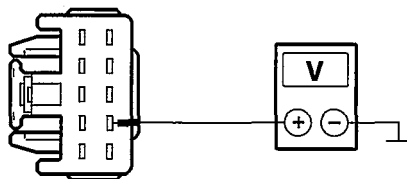
 <p>VFE0033861</p>	<input checked="" type="checkbox"/> 1 Measure the voltage between the dipped beam relay, socket C417, pin 1, circuit 15s-LE19 (GNIBU), CJB side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes</p> <p>GO to F5.</p> <p>→ No</p> <p>INSTALL A NEW dipped beam relay. CHECK the operation of the system.</p>

F5: CHECK CONTROL CIRCUIT 15S-LE19 (GN/BU) FOR SHORT TO BATTERY VOLTAGE

	<input checked="" type="checkbox"/> 1 Ignition switch in position 0.
	<input checked="" type="checkbox"/> 2 Disconnect turn signal switch from connector C357.
	<input checked="" type="checkbox"/> 3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0016044

DETAILS/RESULTS/ACTIONS

- 4 Measure voltage between turn signal switch, connector C357, pin 9, circuit 15s-LEI9 (GNIBU), wiring harness side and ground.

• Does the meter display battery voltage?

→ **Yes**

LOCATE and RECTIFY the short to battery voltage in the circuit between the turn signal switch and the dipped beam relay using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to F6.

F6: CHECK THE HEADLAMP SWITCH

- ☐ Ignition switch in position 0.

- 2 Disconnect headlamp switch from connector C338.

- ☐ Connect turn signal switch with connector C357.

- 4 Connect dipped beam relay to socket C417.

- ☐ Ignition switch in position II.

- 6 Check the dipped beam.

• Does the dipped beam illuminate?

→ **Yes**

LOCATE and RECTIFY short to battery voltage in circuit 15s-LEI4 (GN/RD) between headlamp switch and turn signal switch using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

INSTALL A NEW headlamp switch. CHECK the operation of the system.

F7: NARROW DOWN THE CAUSE OF THE SHORT TO BATTERY VOLTAGE

NOTE: Main beam is switched off.

- 1 Ignition switch in position 0.

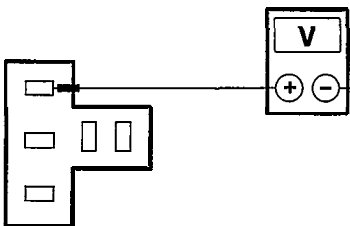
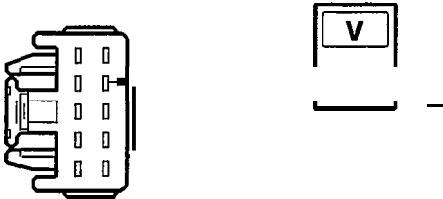
- 2 Disconnect main beam relay from socket C411.

- 3 Ignition switch in position II.

DIAGNOSIS AND TESTING

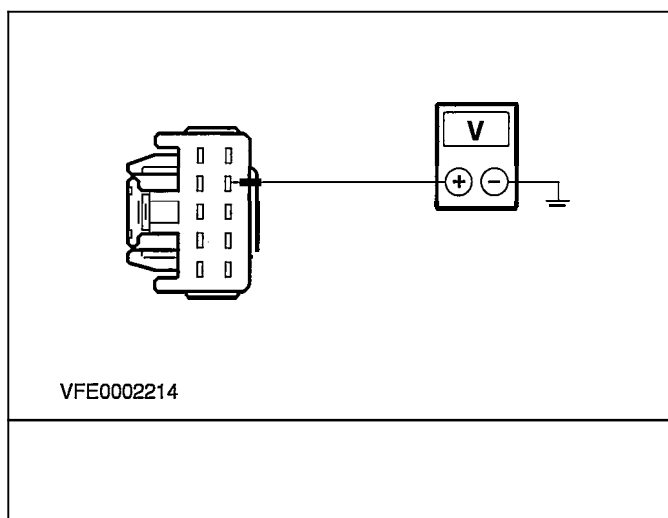
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>4 Check the main beam.</p> <ul style="list-style-type: none"> Does the main beam illuminate? <p>→ Yes GO to F8.</p> <p>→ No GO to F9.</p>
F8: NARROW DOWN THE CAUSE OF THE SHORT TO BATTERY VOLTAGE	
	1 Ignition switch in position 0.
	2 Disconnect fuse F52 (10 A) (CJB).
	Disconnect fuse F53 (10 A) (CJB).
	4 Ignition switch in position II.
	<p>5 Check the main beam.</p> <ul style="list-style-type: none"> Does main beam illuminate on one side? <p>→ Yes</p> <ul style="list-style-type: none"> Left-hand main beam illuminates: LOCATE and RECTIFY the short to battery voltage in circuit 15s-LE15 (GN/BK), which is connected to the output of fuse F52 (10 A) (CJB), using the Wiring Diagrams. CHECK the operation of the system. Right-hand main beam illuminates: LOCATE and RECTIFY the short to battery voltage in circuit 15S-LE22 (GN/OG), which is connected to the output of fuse F53 (10 A) (CJB), using the Wiring Diagrams. CHECK the operation of the system. <p>→ No</p> <p>LOCATE and RECTIFY the short to battery voltage in circuit 15S-DB6 (GN/WH), between main beam relay and CJB, using the Wiring Diagrams, if necessary INSTALL A NEW CJB. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
F9: CHECK THE VOLTAGE AT THE MAIN BEAM RELAY (CONTROL CIRCUIT)	
 <p>VFE0033861</p>	<ol style="list-style-type: none"> 1 Measure the voltage between the main beam relay, socket C411, pin 1, circuit 15S-LE12 (GNNE), CJB side and ground. <ul style="list-style-type: none"> • Does the meter display battery voltage? → Yes GO to F10. → No INSTALL A NEW main beam relay. CHECK the operation of the system.
F10: CHECK CONTROL CIRCUIT 15s-LE12 (GNNE) FOR SHORT TO BATTERY VOLTAGE	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect turn signal switch from connector C357. 3 Ignition switch in position II.
 <p>VFE0002214</p>	<ol style="list-style-type: none"> 4 Measure the voltage between turn signal switch, connector C357, pin 7, circuit 15S-LE12A (GNNE), wiring harness side and ground. <ul style="list-style-type: none"> • Does the meter display battery voltage? → Yes GO to F11. → No INSTALL A NEW turn signal switch. CHECK the operation of the system.
F11: CHECK THE INSTRUMENT CLUSTER	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect instrument cluster from connector C332. 3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

Measure the voltage between turn signal switch, connector C357, pin 7, circuit 15s-LEI2A (GNNE), wiring harness side and ground.

- Does the meter display battery voltage?

→ **Yes**

LOCATE and RECTIFY the short to battery voltage in the circuit(s) connected to soldered connection S274 using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

CHECK the instrument cluster using WDS, INSTALL A NEW ONE if necessary. CHECK the operation of the system.

PINPOINT TEST G : THE HEADLAMP FLASHER IS INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

G1: DETERMINE THE FAULT CONDITION

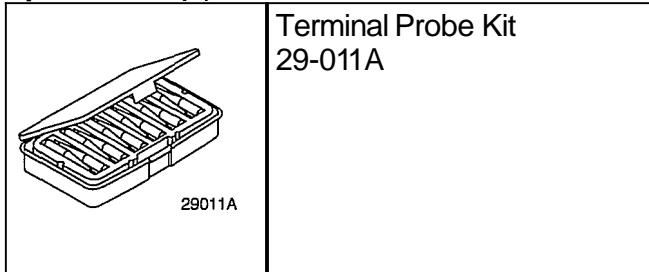
	<input type="checkbox"/> 1 Ignition switch in position II.
	<input type="checkbox"/> 2 Determine the fault condition.
	<input type="checkbox"/> SWITCH ON main beam. <ul style="list-style-type: none"> • Is the main beam permanently switched on? <p>→ Yes GO to G2.</p> <p>→ No GO to Pinpoint Test C.</p>

G2: LOCATE THE FAULT

	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> 2 Disconnect turn signal switch from connector C357.
	<input type="checkbox"/> 3 Ignition switch in position II.
<p>VFE0016037</p>	<input type="checkbox"/> Measure the voltage between turn signal switch, connector C357, pin 6, circuit 15-LEI4 (GN/RD), wiring harness side and ground. <ul style="list-style-type: none"> • Does the meter display battery voltage? <p>→ Yes INSTALL A NEW turn signal switch. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the headlamp switch and the turn signal switch using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING**Headlamps — Vehicles Built From: 1012005**

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)

Terminal Probe Kit
29-011A

Inspection and Checking

NOTE:Before reading out the vehicle-specific data, remake all the electrical connections to the module to be removed, so that communication between the module and WDS is ensured.

NOTE:If the generic electronic module (GEM) is changed, the new one must be reinitialised. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module. REFER to:

Module Configuration (418-01, Diagnosis and Testing),
Generic Electronic Module (GEM) - Vehicles Built From: 1012005 (419-10, Diagnosis and Testing).

1. Verify the customer concern.
2. Visually check for any obvious mechanical or electrical damage.

Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> • CHECK the wind-shield for damage/cracks in the vicinity of the rain sensor. • CHECK that the rain sensor retaining frame is correctly attached to the wind-shield. 	<ul style="list-style-type: none"> • Fuse(s) • Lamp(s) • Connector(s) • Switches • Wiring loom

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.
4. If the concern is not visually evident, refer to the Symptom Chart.

Symptom Chart**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> • Dipped beam and main beam inoperative 	<ul style="list-style-type: none"> • Fuse • Circuit(s) • Headlamp switch • Steering column multifunction switch. • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test A.
<ul style="list-style-type: none"> • The dipped beam is inoperative 	<ul style="list-style-type: none"> • Circuit(s) • Dipped beam relay • Steering column multifunction switch. • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test B.
<ul style="list-style-type: none"> • The automatic headlamps are inoperative (dipped beam OK) 	<ul style="list-style-type: none"> • Circuit(s) • Headlamp switch • Rain sensor • Central junction box (CJB) • Generic Electronic Module (GEM) 	<ul style="list-style-type: none"> • GO to Pinpoint Test C.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
• The main beam is inoperative	<ul style="list-style-type: none"> Circuit(s) Main beam relay Steering column multifunction switch. Central junction box (CJB) 	• GO to Pinpoint Test D.
• One dipped beam is inoperative	<ul style="list-style-type: none"> Fuse Circuit(s) Left/right-hand headlamp Central junction box (CJB) 	• GO to Pinpoint Test E.
• One main beam is inoperative	<ul style="list-style-type: none"> Fuse Circuit(s) Left/right-hand headlamp Central junction box (CJB) 	• GO to Pinpoint Test F.
• The headlamps illuminate continuously	<ul style="list-style-type: none"> Circuit(s) Dipped beam relay Main beam relay Steering column multifunction switch. Headlamp switch Instrument cluster Central junction box (CJB) 	GO to Pinpoint Test G.
• The headlamp flasher is inoperative	<ul style="list-style-type: none"> Circuit(s) Steering column multifunction switch. 	• GO to Pinpoint Test H.
• The main beam warning lamp is inoperative	<ul style="list-style-type: none"> Circuit(s) Instrument cluster 	• REFER to: Instrument Cluster - Vehicles Built From: 10/2005 (413-01, Diagnosis and Testing).
• The headlamp delayed switch-off function is inoperative (dipped beam/main beam and automatic headlamps OK)	<ul style="list-style-type: none"> Generic Electronic Module (GEM) 	• REFER to: Module Configuration (418-01, Diagnosis and Testing).

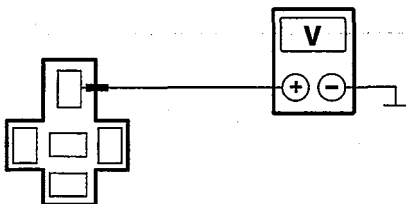
System Checks

NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST H : DIPPED BEAM AND MAIN BEAM INOPERATIVE

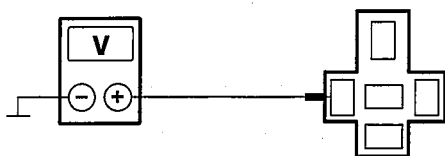
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
AI: CHECK FUSE F31 (10 A) (CJB).	
	1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> CHECK fuse F31 (10 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK.? → Yes GO to A2. → No RENEW fuse F31 (10 A) (CJB) and CHECK the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
A2: CHECK THE VOLTAGE SUPPLY TO FUSE F31 (10A) (CJB) FOR OPEN CIRCUIT	
	<input type="checkbox"/> 1 Connect fuse F31 (10 A) (CJB). <input type="checkbox"/> 2 Ignition switch in position II. <input type="checkbox"/> 3 Measure the voltage between fuse F31 (10 A) (CJB) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to A3. → No LOCATE AND RECTIFY the break in the voltage supply of fuse F31 (10 A) (CJB) using the Wiring Diagrams. If necessary CHECK and RENEW the CJB. CHECK the operation of the system.
A3: CHECK THE VOLTAGE SUPPLY TO THE AUTOMATIC HEADLAMPS RELAY (PIN 3) FOR OPEN CIRCUIT	
	<input type="checkbox"/> Ignition switch in position 0. <input type="checkbox"/> Disconnect Automatic headlamps relay from socket C418.
 VFE0036754	<input type="checkbox"/> Measure the voltage between the automatic headlamps relay, socket C418, pin 3, circuit 15-LE29A (GN/BK), CJB side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to A4. → No LOCATE and RECTIFY the break in the circuit between fuse F31 and the automatic headlamps relay using the Wiring Diagrams. CHECK the operation of the system.

DETAILS/RESULTS/ACTIONS

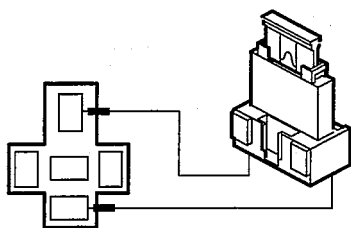
A4: CHECK THE VOLTAGE SUPPLY TO THE AUTOMATIC HEADLAMPS RELAY (PIN 1) FOR OPEN CIRCUIT



VFE0026275

- 1** Ignition switch in position II.
-
- Measure the voltage between the automatic headlamps relay, socket C418, pin 1, circuit 15-LE36 (GN/WH), CJB side and ground.
- Does the meter display battery voltage?
- **Yes**
GO to A5.
- **No**
LOCATE and RECTIFY the break in the circuit between soldered connection S1 and the automatic headlamps relay using the Wiring Diagrams. CHECK the operation of the system.

A5: NARROW DOWN THE CAUSE OF THE FAULT



VFE0036753

- ☐ Ignition switch in position 0.

☐ 2 Connect a fused jumper wire (10 A) to the automatic headlamps relay, socket C418, between pin 3, circuit 15-LE29A (GN/BK) and pin 5, circuit 15-LE29 (GN/BK), CJB side.

☐ 3 Ignition switch in position II.

☐ 4 SWITCH ON dipped beam.

☐ CHECK the operation of the dipped beam.

 - Does the dipped beam illuminate?

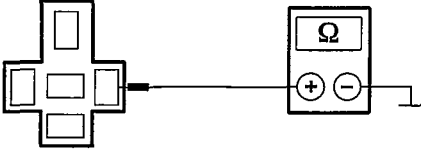
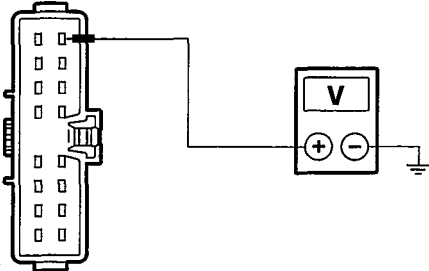
→ **Yes**
GO to A6.

→ **No**
GO to A7.

A6: CHECK THE GROUND CONNECTION OF THE AUTOMATIC HEADLAMPS RELAY FOR OPEN CIRCUIT

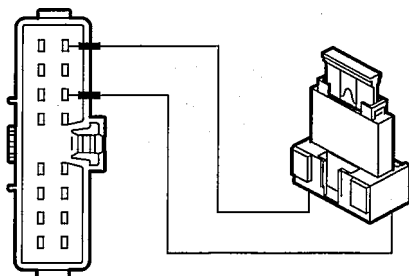
- 1** Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS	RESULTS	ACTIONS
 VFE0026280		2	Measure the resistance between the automatic headlamps relay, socket C418, pin 2, circuit 31-LE36 (BK), CJB side and ground.	<ul style="list-style-type: none">Is a resistance of less than 2 ohms registered? <p>→ Yes RENEW the automatic headlamps relay. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the automatic headlamps relay and soldered connection S15 using the Wiring Diagrams. CHECK the operation of the system.</p>
A7: CHECK VOLTAGE SUPPLY OF THE HEADLAMP SWITCH FOR OPEN CIRCUIT				
		<input type="checkbox"/> Ignition switch in position 0.		
		<input type="checkbox"/> Connect Automatic headlamps relay to socket C418.		
		<input type="checkbox"/> Disconnect headlamp switch from connector C338.		
 VFE0001471		5	Measure voltage between headlamp switch, connector C338, pin 8, circuit 15-LE29 (GN/BK)/15-LE14 (GN/RD), wiring harness side and ground.	<ul style="list-style-type: none">Does the meter display battery voltage? <p>→ Yes GO to A8.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the automatic headlamps relay and the headlamp switch using the Wiring Diagrams. CHECK the operation of the system.</p>
A8: CHECK THE HEADLAMP SWITCH				
		<input type="checkbox"/> Ignition switch in position 0.		

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0016100

DETAILS/RESULTS/ACTIONS

- 2 Connect a fused jumper wire (10 A) to the headlamp switch, connector C338, between pin 8, circuit 15-LE29 (GN/BK)/15-LE14 (GNIRD) and pin 6, circuit 15s-LE14 (GNIRD), wiring harness side.

- ☐ Ignition switch in position II.

(4) CHECK the operation of the dipped beam.

- Does the dipped beam illuminate?

→ **Yes**

INSTALL A NEW headlamp switch. CHECK the operation of the system.

→ **No**

GO to A9.

A9: CHECK CIRCUIT 15S-LE14 (GNIRD) BETWEEN THE HEADLAMP SWITCH AND THE STEERING COLUMN MULTIFUNCTION SWITCH FOR OPEN CIRCUIT

- 1 Ignition switch in position 0.

- 2 Connect Headlamp switch to connector C338.

- 3 Disconnect steering column multifunction switch from connector C357.

- (4) Ignition switch in position II.

- 5 SWITCH ON dipped beam

- 6 Measure the voltage between steering column multifunction switch, connector C357, pin 8, circuit 15S-LE14 (GNIRD), wiring harness side and ground.

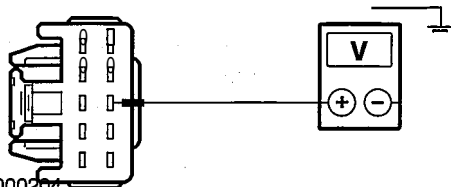
- Does the meter display battery voltage?

→ **Yes**

GO to A10.

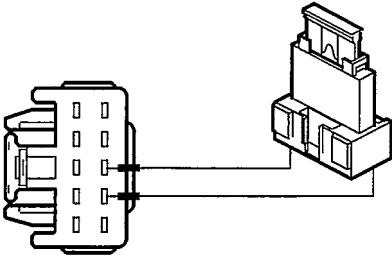
→ **No**

LOCATE and REPAIR the open circuit between the headlamp switch and the steering column multifunction switch using the Wiring Diagrams. CHECK the operation of the system.



VFE0000204

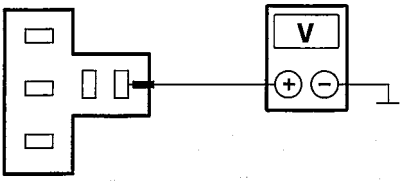
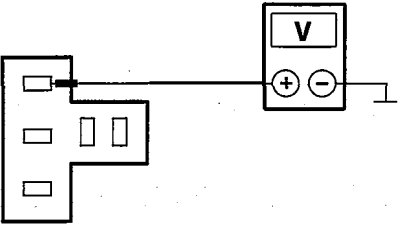
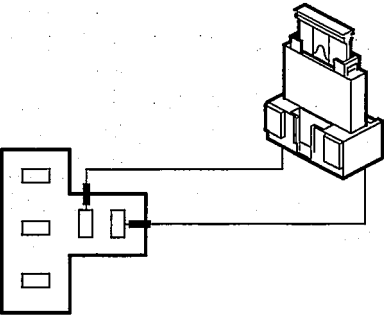
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A10: CHECK THE STEERING COLUMN MULTIFUNCTION SWITCH	
 VFE0016101	1 Ignition switch in position 0.
	2 Connect a fused jumper wire (10 A) at the steering column multifunction switch, connector C357, between pin 8, circuit 15s-LE14 (GN/IRD) and pin 9, circuit 15s-LE19 (GN/BU), wiring harness side.
	3 Ignition switch in position II.
	4 CHECK the operation of the dipped beam. <ul style="list-style-type: none">Does the dipped beam illuminate?<ul style="list-style-type: none">→ Yes INSTALL a new steering column multifunction switch. CHECK the operation of the system.→ No LOCATE and RECTIFY break in circuit 31-DA12 (BK), between soldered connection S15 and ground G13 using the Wiring Diagrams. CHECK the operation of the system.

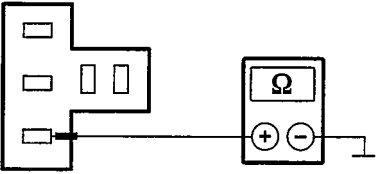
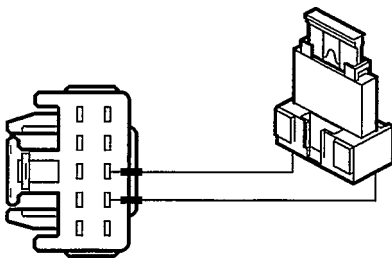
PINPOINT TEST I : THE DIPPED BEAM IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
BI: CHECK VOLTAGE SUPPLY OF DIPPED BEAM RELAY (LOAD CURRENT CIRCUIT) FOR OPEN CIRCUIT	
	1 Ignition switch in position 0.
	2 Disconnect dipped beam relay from socket C417.
	3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033863</p>	<input type="checkbox"/> Measure the voltage between the dipped beam relay, socket C417, pin 3, circuit 30-LE20 (RD), CJB side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to B2.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the jumper (CJB) and the dipped beam relay using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.</p>
B2: NARROW DOWN THE CAUSE OF THE FAULT	
 <p>VFE0033861</p>	<p>1 SWITCH ON dipped beam.</p> <input type="checkbox"/> Measure the voltage between the dipped beam relay, socket C417, pin 1, circuit 15S-LE19 (GN/BU), CJB side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to B3.</p> <p>→ No GO to B5.</p>
B3: CHECK THE LOAD CURRENT CIRCUIT OF THE DIPPED BEAM RELAY FOR OPEN CIRCUIT	
 <p>VFE0033864</p>	<p>1 Ignition switch in position 0.</p> <input type="checkbox"/> Connect a fused jumper wire (20 A) at the dipped beam relay, socket C417, between pin 3 circuit 30-LE20 (RD) and pin 5, circuit 15S-DB7 (GNNE), CJB side.
	<p>3 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> CHECK the dipped beam. <ul style="list-style-type: none"> Does the dipped beam illuminate? → Yes GO to B4. → No LOCATE and RECTIFY the break in the circuit between dipped beam relay and bridge (CJB) using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.
B4: CHECK THE GROUND CONNECTION OF THE DIPPED BEAM RELAY FOR OPEN CIRCUIT	
 <p>VFE0033862</p>	<ol style="list-style-type: none"> Ignition switch in position 0. Measure the resistance between the dipped beam relay, socket C417, pin 2, circuit 31-LEI9 (BK), CJB side and ground. <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? → Yes INSTALL A NEW dipped beam relay. CHECK the operation of the system. → No LOCATE and RECTIFY the break in the circuit between the dipped beam relay and soldered connection S15 using the Wiring Diagrams. CHECK the operation of the system.
B5: CHECK THE STEERING COLUMN MULTIFUNCTION SWITCH	
 <p>VFE0016101</p>	<ol style="list-style-type: none"> Ignition switch in position 0. <input type="checkbox"/> Disconnect steering column multifunction switch from connector C357. <ol style="list-style-type: none"> Connect Dipped beam relay to socket C417. <input type="checkbox"/> Connect a fused jumper wire (10 A) at the steering column multifunction switch, connector C357, between pin 8, circuit 15s-LEI4 (GN/RD) and pin 9, circuit 15s-LEI9 (GN/BU), wiring harness side. <input type="checkbox"/> Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

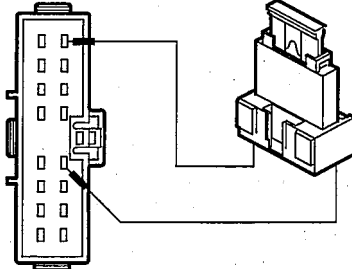
	<input type="checkbox"/> SWITCH ON dipped beam.
	<input type="checkbox"/> CHECK the dipped beam. <ul style="list-style-type: none"> Does the dipped beam illuminate? → Yes INSTALL a new steering column multifunction switch. CHECK the operation of the system.
	→ No LOCATE and REPAIR the open circuit between the steering column multifunction switch and the dipped beam relay using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST J : THE AUTOMATIC HEADLAMPS ARE INOPERATIVE (DIPPED BEAM OK)

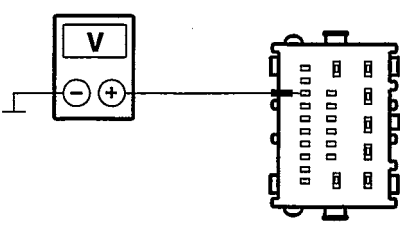
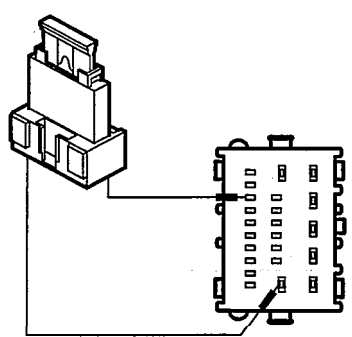
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

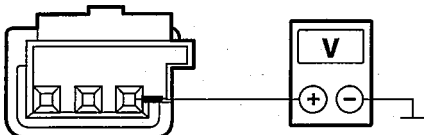
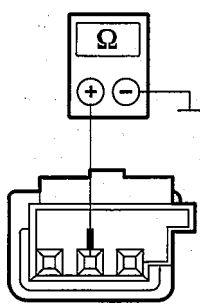
C1: CHECK THE HEADLAMP SWITCH

 <p>VFE0028649</p>	1 Ignition switch in position 0.
	2 Disconnect headlamp switch from connector C338.
	<input type="checkbox"/> Connect a fused jumper wire (10 A) to the headlamp switch, connector C338, between pin 8, circuit 15-LE29 (GN/BK)/15-LE14 (GNIRD) and pin 4, circuit 15S-LE14B (GNIRD), wiring harness side.
	4 Ignition switch in position II.
	5 Cover rain sensor with a light-proof material to simulate darkness.
	<input type="checkbox"/> CHECK the operation of the dipped beam. <ul style="list-style-type: none"> Does the dipped beam illuminate? → Yes INSTALL A NEW headlamp switch. CHECK the operation of the system.
	→ No GO to C2.

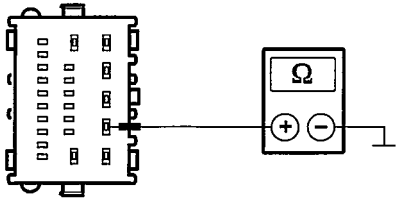
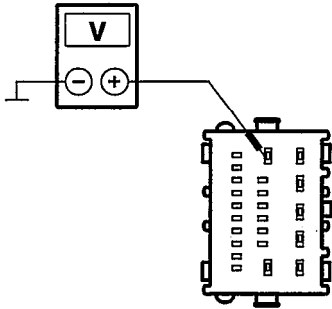
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C2: CHECK CIRCUIT 15S-LE14B (GNIRD) BETWEEN THE HEADLAMP SWITCH AND THE GENERIC ELECTRONIC MODULE (GEM) FOR OPEN CIRCUIT	
 <p>VFE64512</p>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Connect Headlamp switch to connector C338. 3 Disconnect Generic electronic module (GEM) from connector C320. 4 Ignition switch in position II. 5 SWITCH ON the automatic headlamps at the headlamp switch.
	<ol style="list-style-type: none"> 6 Measure the voltage between generic electronic module (GEM), connector C320, pin 21, circuit 15S-LE14B (GNIRD), wiring harness side and ground. <ul style="list-style-type: none"> • Does the meter display battery voltage? <ul style="list-style-type: none"> → Yes GO to C3. → No LOCATE and RECTIFY the break in the circuit between the headlamp switch and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.
C3: CHECK CIRCUIT 15S-LE14A (GNIRD) BETWEEN THE GENERIC ELECTRONIC MODULE (GEM) AND THE HEADLAMP SWITCH FOR OPEN CIRCUIT	
 <p>VFE64513</p>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Connect a fused jumper wire (10 A) at the generic electronic module (GEM), connector C320, between pin 21, circuit 15S-LE14B (GNIRD) and pin 6, circuit 15S-LE14A (GNIRD), wiring harness side.
	<ol style="list-style-type: none"> 3 Ignition switch in position II. 4 SWITCH ON the automatic headlamps at the headlamp switch.

DIAGNOSIS AND TESTING

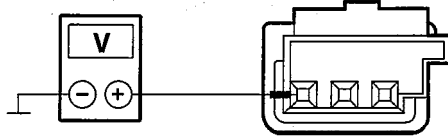
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>5 CHECK the operation of the dipped beam.</p> <ul style="list-style-type: none"> Does the dipped beam illuminate? <p>→ Yes GO to C4.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the headlamp switch using the Wiring Diagrams. CHECK the operation of the system.</p>
C4: CHECK VOLTAGE SUPPLY OF RAIN SENSOR FOR OPEN CIRCUIT	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Rain sensor from connector C754.</p> <p>3 Ignition switch in position II.</p>
 <p>VFE0038444</p>	<p>4 Measure the voltage between the rain sensor, connector C754, pin 1, circuit 15-LE55 (GN/OG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to C5.</p> <p>→ No LOCATE and RECTIFY break in circuit between soldered connection S3 and the rain sensor using the Wiring Diagrams. CHECK the operation of the system.</p>
C5: CHECK THE GROUND CONNECTION OF THE RAIN SENSOR FOR OPEN CIRCUIT	
 <p>VFE0038446</p>	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Measure the resistance between the rain sensor, connector C754, pin 2, circuit 31-LE55 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes GO to C6.</p> <p>→ No LOCATE and RECTIFY break in circuit between rain sensor and soldered connection S264 using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C6: CHECK THE GROUND CONNECTION TO THE GENERIC ELECTRONIC MODULE (GEM) FOR OPEN CIRCUIT	
 <p>VFE0028651</p>	<p><input type="checkbox"/> Measure the resistance between the generic electronic module (GEM), connector C320, pin 2, circuit 91-DK20 (BWRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 ohms registered? <p>→ Yes GO to C7.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the soldered connection S264 using the Wiring Diagrams. CHECK the operation of the system.</p>
C7: CHECK THE VOLTAGE SUPPLY TO THE GENERIC ELECTRONIC MODULE (GEM) FOR OPEN CIRCUIT	
 <p>VFE64514</p>	<p>1 Disconnect Generic electronic module (GEM) from connector C316.</p> <p>2 Ignition switch in position II.</p> <p>3 Measure the voltage between the generic electronic module (GEM), connector C316, pin 7, circuit 29-LE29A (OG/BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> • Does the meter display battery voltage? <p>→ Yes GO to C8.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F17 and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.</p>
C8: NARROW DOWN THE CAUSE OF THE FAULT	
	<p>1 Ignition switch in position 0.</p> <p>2 Connect Generic electronic module (GEM) to connector C316.</p> <p>3 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0038449

DETAILS/RESULTS/ACTIONS

- 4 Measure the voltage between the rain sensor, connector C754, pin 3, circuit 8-LE55 (WH/BK), wiring harness side and ground.

- Does the meter display battery voltage?

→ **Yes**

GO to C9.

→ **No**

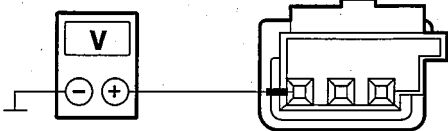
GO to C10.

C9: CHECK SIGNAL CABLE OF RAIN SENSOR FOR SHORT TO BATTERY VOLTAGE

- 1 Ignition switch in position 0.

- 2 Disconnect Generic electronic module (GEM) from connector C316.

- 3 Ignition switch in position II.



VFE0038449

- 4 Measure the voltage between the rain sensor, connector C754, pin 3, circuit 8-LE55 (WH/BK), wiring harness side and ground.

- Does the meter display battery voltage?

→ **Yes**

LOCATE and RECTIFY the short to battery voltage in the circuit between the generic electronic module (GEM) and the sensor using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

RENEW the generic electronic module (GEM). CHECK the operation of the system.

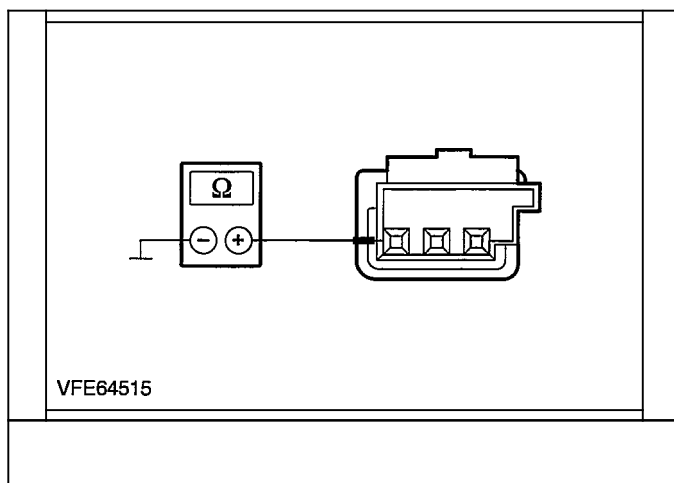
C10: CHECK SIGNAL CABLE OF RAIN SENSOR FOR SHORT TO GROUND

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

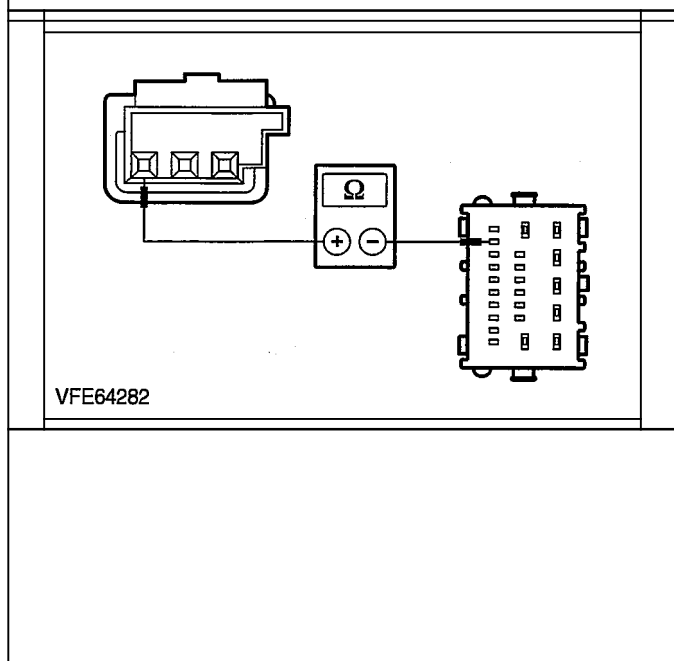
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



- 2 Measure the resistance between the rain sensor, connector C754, pin 3, circuit 8-LE55 (WHIBK), wiring harness side and ground.
- Is a resistance of more than 10,000 ohms measured?
- **Yes**
GO to C11.
- **No**
LOCATE and RECTIFY the short to ground in the circuit between CJB and the rain sensor using the Wiring Diagrams. CHECK the operation of the system.

C11: CHECK SIGNAL CABLE OF RAIN SENSOR FOR OPEN CIRCUIT



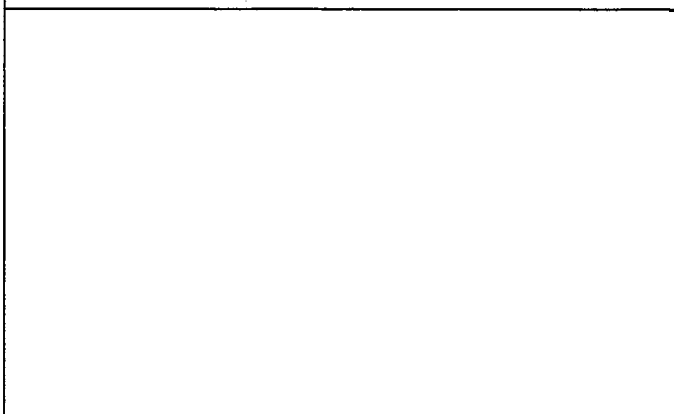
- 1 Measure the resistance between the generic electronic module (GEM), connector C316, pin 22, circuit 8-LE55 (WHIBK), wiring harness side and the rain sensor, connector C754, pin 3, circuit 8-LE55 (WHIBK), wiring harness side.
- Is a resistance of less than 2 ohms registered?
- **Yes**
RENEW the rain sensor. CHECK the operation of the system. If the concern remains, RENEW the generic electronic module (GEM). CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the rain sensor using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST K : THE MAIN BEAM IS INOPERATIVE

TEST CONDITIONS

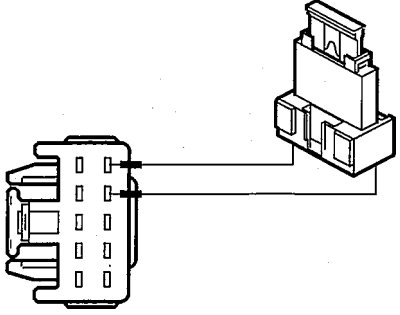
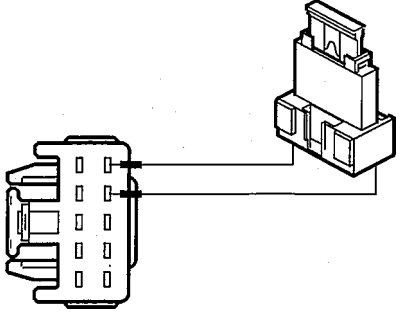
DETAILS/RESULTS/ACTIONS

D1: CHECK THE MAIN BEAM WARNING LAMP



- 1 Ignition switch in position II.
- ☐ SWITCH ON main beam.
- 3 CHECK the main beam warning lamp.
- Does the main beam warning lamp illuminate?
- **Yes**
GO to D3.
- **No**
GO to D2.

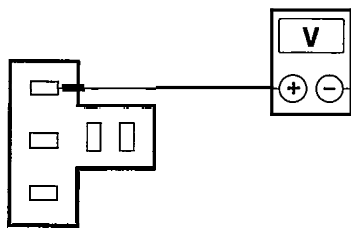
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D2: CHECK THE STEERING COLUMN MULTIFUNCTION SWITCH	
 <p>VFE0016107</p>	<input type="checkbox"/> Ignition switch in position 0.
	2 Disconnect steering column multifunction switch from connector C357.
 <p>VFE0016107</p>	3 Connect a fused jumper wire (10 A) at the steering column multifunction switch, connector C357, between pin 6, circuit 15-LE14 (GNIRD) and pin 7, circuit 15S-LE12A (GNNE), wiring harness side.
	<input type="checkbox"/> Ignition switch in position II.
	5 CHECK the main beam. <ul style="list-style-type: none"> • Does the main beam illuminate? → Yes INSTALL a new steering column multifunction switch. CHECK the operation of the system. → No LOCATE and RECTIFY the break in the circuit between the steering column multifunction switch and soldered connection S274 using the Wiring Diagrams. CHECK the operation of the system.
D3: CHECK VOLTAGE SUPPLY OF MAIN BEAM RELAY (CONTROL CIRCUIT) FOR OPEN CIRCUIT	
	1 Ignition switch in position 0.
	2 Disconnect main beam relay from socket C411.
	3 Ignition switch in position II.
	4 SWITCH ON main beam.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



VFE0033861

Measure the voltage between the main beam relay, socket C411, pin 1, circuit 15s-LEI2 (GNNE), CJB side and ground.

- Does the meter display battery voltage?

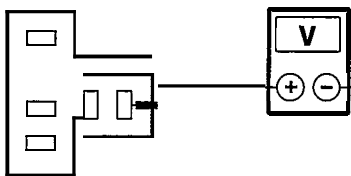
→ **Yes**

GO to D4.

→ **No**

LOCATE and RECTIFY the break in the circuit between soldered connection S274 and the main beam relay using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.

D4: CHECK VOLTAGE SUPPLY OF MAIN BEAM RELAY (LOAD CURRENT CIRCUIT) FOR OPEN CIRCUIT



VFE0033863

- 1 Measure the voltage between the main beam relay, socket C411, pin 3, circuit 30-LEI3 (RD), CJB side and ground.

- Does the meter display battery voltage?

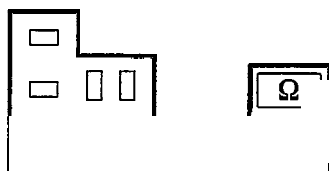
→ **Yes**

GO to D5.

→ **No**

LOCATE and RECTIFY the break in the circuit between the CJB (jumper) and the main beam relay using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.

D5: CHECK THE GROUND CONNECTION OF THE MAIN BEAM RELAY FOR OPEN CIRCUIT



VFE0033862

- ☐ Ignition switch in position 0.

- 2 Measure the resistance between the main beam relay, socket C411, pin 2, circuit 31-LEI2 (BK), CJB side and ground.

- Is a resistance of less than 2 ohms registered?

→ **Yes**

GO to D6.

→ **No**

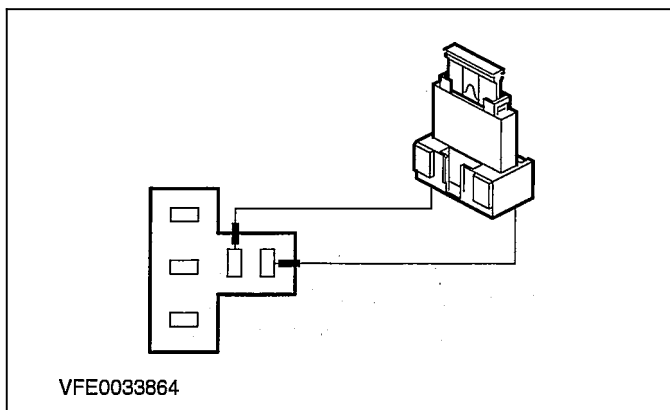
LOCATE and RECTIFY the break in the circuit between the main beam relay and soldered connection S15 using the Wiring Diagrams. CHECK the operation of the system.

D6: CHECK THE LOAD CURRENT CIRCUIT OF THE MAIN BEAM RELAY FOR OPEN CIRCUIT

- ☐ Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2** Connect a fused jumper wire (20 A) at the main beam relay, socket C411, between pin 3, circuit 30-LE13 (RD) and pin 5, circuit 15S-DB6 (GN/WH), CJB side.

- 3** Ignition switch in position II.

- 4** CHECK the main beam.

- Does the main beam illuminate?

→ **Yes**

INSTALL A NEW main beam relay. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between main beam relay and the CJB (jumper) using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.

PINPOINT TEST L : ONE DIPPED BEAM IS INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

E1: DETERMINE THE FAULT CONDITION

- 1** Ignition switch in position II.

- ☐ SWITCH ON dipped beam

- Is the left-hand dipped beam inoperative?

→ **Yes**

GO to E2.

→ **No**

The right-hand dipped beam is inoperative: GO to E6.

E2: CHECK FUSE F9 (10 A) (CJB).

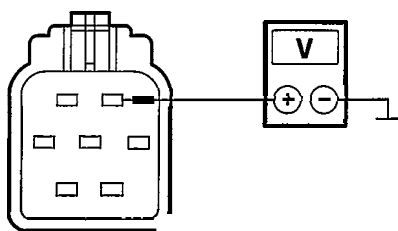
- ☐ Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div>2</div> CHECK fuse F9 (10 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK.? → Yes GO to E3. → No RENEW fuse F9 (10 A) (CJB). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
E3: CHECK THE VOLTAGE SUPPLY TO FUSE F9 (10A) (CJB) FOR OPEN CIRCUIT	
	<div>1</div> Connect fuse F9 (10 A) (CJB). <div>2</div> Ignition switch in position II. <div></div> SWITCH ON dipped beam <div>4</div> Measure the voltage between fuse F9 (10 A) (CJB) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to E4. → No LOCATE AND RECTIFY the break in the voltage supply of fuse F9 (10 A) (CJB) using the Wiring Diagrams. If necessary CHECK and RENEW the CJB. CHECK the operation of the system.
E4: CHECK THE VOLTAGE SUPPLY TO THE LEFT-HAND HEADLAMP FOR OPEN CIRCUIT	
	<div>1</div> Ignition switch in position 0. <div>2</div> Disconnect left-hand headlamp from connector C416. <div>3</div> Ignition switch in position II. <div>4</div> SWITCH ON dipped beam.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0016224

DETAILS/RESULTS/ACTIONS

Measure the voltage between left-hand headlamp, connector C416, pin 2, circuit 15S-LE16 (GN/OG), wiring harness side and ground.

- Does the meter display battery voltage?

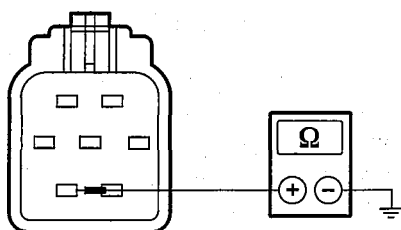
→ **Yes**

GO to E5.

→ **No**

LOCATE and RECTIFY the break in the circuit between fuse F9 (CJB) and the left headlamp using the Wiring Diagrams. CHECK the operation of the system.

E5: CHECK GROUND CONNECTION OF LEFT-HAND HEADLAMP FOR OPEN CIRCUIT



E0011568

- ☐ Ignition switch in position 0.

- 2** Measure the resistance between the left-hand headlamp, connector C416, pin 6, circuit 31-LE31 (BK), wiring harness side and ground.

- Is a resistance of less than 2 ohms registered?

→ **Yes**

CHECK and if necessary INSTALL A NEW left-hand headlamp. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the left-hand headlamp and soldered connection S10 using the Wiring Diagrams. CHECK the operation of the system.

E6: CHECK FUSE F10 (10 A) (CJB).

- ☐ Ignition switch in position 0.

CHECK fuse F10 (10 A) (CJB).

- Is the fuse OK.?

→ **Yes**

GO to E7.

→ **No**

RENEW fuse F10 (10 A) (CJB). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.

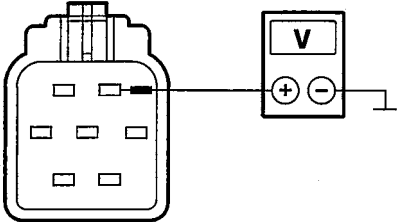
E7: CHECK THE VOLTAGE SUPPLY TO FUSE F10 (10A) (CJB) FOR OPEN CIRCUIT

- ☐ Connect fuse F10 (10 A) (CJB).

- ☐ Ignition switch in position II.

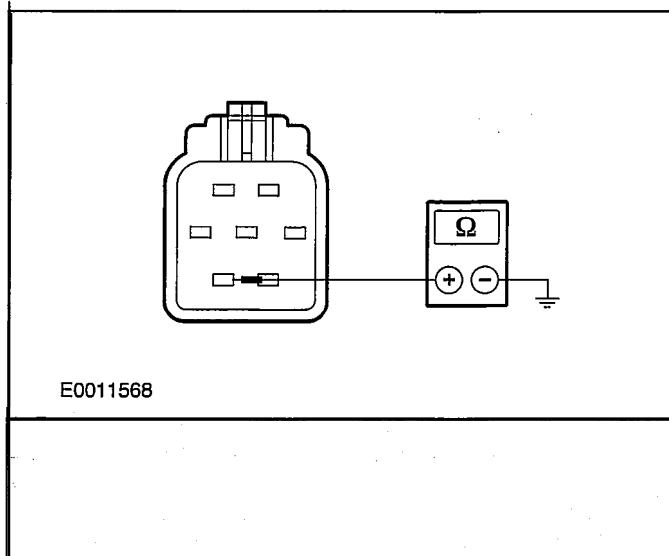
- ☐ SWITCH ON dipped beam

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSIRERESULTSIACTIONS
	<div><div>4</div>Measure the voltage between fuse F10 (10 A) (CJB) and ground.<ul style="list-style-type: none">Does the meter display battery voltage?<div>→ Yes GO to E8.</div><div>→ No LOCATE AND RECTIFY the break in the voltage supply of fuse F10 (10 A) (CJB) using the Wiring Diagrams. If necessary CHECK and RENEW the CJB. CHECK the operation of the system.</div></div>
E8: CHECK THE VOLTAGE SUPPLY TO THE RIGHT-HAND HEADLAMP FOR OPEN CIRCUIT	
	<div><div>1</div>Ignition switch in position 0.</div> <div><div>2</div>Disconnect Right-hand headlamp from connector C422.</div> <div><div>3</div>Ignition switch in position II.</div> <div><div>4</div>SWITCH ON dipped beam.</div>
<div><p>VFE0016224</p></div>	<div><div></div>Measure the voltage between the right-hand headlamp, connector C422, pin 2, circuit 15S-LE23 (GN/WH), wiring harness side and ground.<ul style="list-style-type: none">Does the meter display battery voltage?<div>→ Yes GO to E9.</div><div>→ No LOCATE and RECTIFY the break in the circuit between fuse F10 (CJB) and the right-hand headlamp using the Wiring Diagrams. CHECK the operation of the system.</div></div>
E9: CHECK GROUND CONNECTION OF RIGHT-HAND HEADLAMP FOR OPEN CIRCUIT	
	<div><div>1</div>Ignition switch in position 0.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between right-hand headlamp, connector C422, pin 6, circuit 3-LE30 (BK), wiring harness side and ground.
 - Is a resistance of less than 2 ohms registered?
 - **Yes**
CHECK and if necessary RENEW the right-hand headlamp. CHECK the operation of the system.
 - **No**
LOCATE and RECTIFY the break in the circuit between the right-hand headlamp and soldered connection S11 using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST M : ONE MAIN BEAM IS INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

F1: DETERMINE THE FAULT CONDITION

- 1 Ignition switch in position II.
- ☐ SWITCH ON main beam.
- 3 Determine the fault condition.
 - Is the left-hand main beam inoperative?
 - **Yes**
GO to F2.
 - **No**
The right-hand main beam is inoperative: GO to F6.

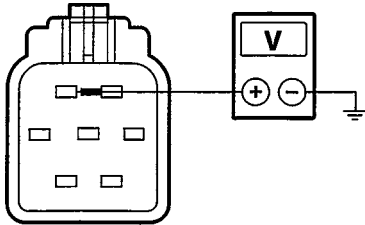
F2: CHECK FUSE F52 (10 A) (CJB).

- 1 Ignition switch in position 0.
- 2 CHECK fuse F52 (10 A) (CJB).
 - Is the fuse OK.?
 - **Yes**
GO to F3.
 - **No**
RENEW fuse F52 (10 A) (CJB). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.

F3: CHECK THE VOLTAGE SUPPLY TO FUSE F52 (10A) (CJB) FOR OPEN CIRCUIT

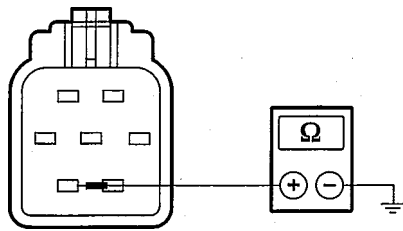
- 1 Connect fuse F52 (10 A) (CJB).
- ☐ Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div>3 SWITCH ON main beam.</div> <div> <div>4 Measure the voltage between fuse F52 (10 A) (CJB) and ground.</div> <div>• Does the meter display battery voltage?</div> <div>→ Yes GO to F4.</div> <div>→ No LOCATE AND RECTIFY the break in the voltage supply of fuse F52 (10 A) (CJB) using the Wiring Diagrams. If necessary CHECK and RENEW the CJB. CHECK the operation of the system.</div> </div>
F4: CHECK THE VOLTAGE SUPPLY TO THE LEFT-HAND HEADLAMP FOR OPEN CIRCUIT	
	<div>1 Ignition switch in position 0.</div> <div>2 Disconnect left-hand headlamp from connector C416.</div> <div>3 Ignition switch in position II.</div> <div>4 SWITCH ON main beam.</div>
 <p>E0011505</p>	<div>5 Measure the voltage between the left-hand headlamp, connector C416, pin 1, circuit 15S-LE 15 (GN/BK), wiring harness side and ground.</div> <div>• Does the meter display battery voltage?</div> <div>→ Yes GO to F5.</div> <div>→ No LOCATE and RECTIFY the break in the circuit between fuse F52 (CJB) and the left headlamp using the Wiring Diagrams. CHECK the operation of the system.</div>
F5: CHECK GROUND CONNECTION OF LEFT-HAND HEADLAMP FOR OPEN CIRCUIT	
	<div>1 Ignition switch in position 0.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS



E0011568

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the left-hand headlamp, connector C416, pin 6, circuit 31-LE31 (BK), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
- **Yes**
CHECK and if necessary INSTALL A NEW headlamp. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit between the headlamp and soldered connection S10 using the Wiring Diagrams. CHECK the operation of the system.

F6: CHECK FUSE F53 (10 A) (CJB).

- 1** Ignition switch in position 0.
- 2** CHECK fuse F53 (10 A) (CJB).
- Is the fuse OK.?
- **Yes**
GO to F7.
- **No**
RENEW fuse F53 (10 A) (CJB). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.

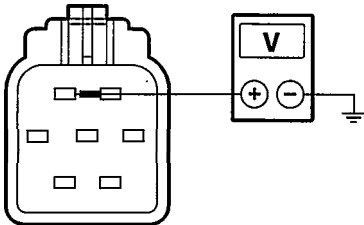
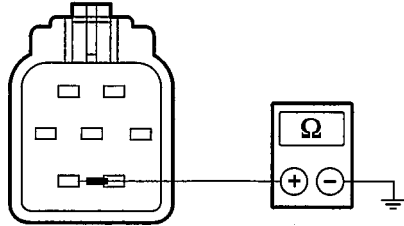
F7: CHECK THE VOLTAGE SUPPLY TO FUSE F53 (10A) (CJB) FOR OPEN CIRCUIT

- ☐ Connect fuse F53 (10 A) (CJB).
- 2** Ignition switch in position II.
- 3** SWITCH ON main beam.
- 4** Measure the voltage between fuse F53 (10 A) (CJB) and ground.
- Does the meter display battery voltage?
- **Yes**
GO to F8.
- **No**
LOCATE AND RECTIFY the break in the voltage supply of fuse F53 (10 A) (CJB) using the Wiring Diagrams. If necessary CHECK and RENEW the CJB. CHECK the operation of the system.

F8: CHECK THE VOLTAGE SUPPLY TO THE RIGHT-HAND HEADLAMP FOR OPEN CIRCUIT

- 1** Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>E0011505</p>	<p>Disconnect Right-hand headlamp from connector C422.</p> <p>3 Ignition switch in position II.</p> <p>SWITCH ON main beam.</p> <p>Measure the voltage between the right-hand headlamp, connector C422, pin 1, circuit 15S-LE22 (GNIOG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to F9.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F53 (CJB) and the right-hand headlamp using the Wiring Diagrams. CHECK the operation of the system.</p>
F9: CHECK GROUND CONNECTION OF RIGHT-HAND HEADLAMP FOR OPEN CIRCUIT	
 <p>E0011568</p>	<p>Ignition switch in position 0.</p> <p>Measure the resistance between right-hand headlamp, connector C422, pin 6, circuit 31-LE30 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes CHECK and if necessary INSTALL A NEW headlamp. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the headlamp and soldered connection S II using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST N : THE HEADLAMPS ILLUMINATE CONTINUOUSLY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G1: DETERMINE VEHICLE EQUIPMENT LEVEL	
	<p>1 Determine vehicle equipment level.</p> <ul style="list-style-type: none"> Does the vehicle have automatic headlamps? <p>→ Yes GO to G9.</p> <p>→ No GO to G2.</p>

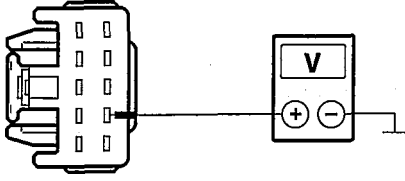
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G2: DETERMINE THE FAULT CONDITION	
	1 SWITCH OFF the headlamp switch.
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> CHECK both headlamps. <ul style="list-style-type: none"> Is the main beam on continuously? <ul style="list-style-type: none"> → Yes GO to G16. → No Dipped beam permanently switched on: GO to G3;
G3: NARROW DOWN THE SOURCE OF THE SHORT TO BATTERY VOLTAGE	
	<input type="checkbox"/> Ignition switch in position 0.
	2 Disconnect dipped beam relay from socket C417.
	3 Ignition switch in position II.
	4 CHECK the dipped beam. <ul style="list-style-type: none"> Does the dipped beam illuminate? <ul style="list-style-type: none"> → Yes GO to G4. → No GO to G5.
G4: NARROW DOWN THE SOURCE OF THE SHORT TO BATTERY VOLTAGE	
	1 Ignition switch in position 0.
	<input type="checkbox"/> Disconnect fuse F9 (10 A) (CJB).
	3 Disconnect fuse F10 (10 A) (CJB).
	4 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSIREULTSIACTIONS
	<div>5</div> <div>CHECK the dipped beam.</div> <div><div>• Is dipped beam illuminated on one side?</div><div>→ Yes<div><div>- Left-hand dipped beam lit: LOCATE and RECTIFY the short to battery voltage in circuit 15s-LE16 (GN/OG), which is connected to the output of fuse F9 (10 A) (CJB), using the Wiring Diagrams. CHECK the operation of the system.</div><div>- Right-hand dipped beam lit: LOCATE and RECTIFY the short to battery voltage in circuit 15S-LE23 (GN/WH), which is connected to the output of fuse F10 (10 A) (CJB), using the Wiring Diagrams. CHECK the operation of the system.</div></div></div><div>→ No<div>LOCATE and RECTIFY short to battery voltage in circuit 15S-DB7 (GNNE) between dipped beam relay and CJB using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.</div></div></div>
G5: CHECK THE VOLTAGE AT THE DIPPED BEAM RELAY (CONTROL CIRCUIT)	
<div></div> <div>VFE0033861</div>	<div>1</div> <div>Measure the voltage between the dipped beam relay, socket C417, pin 1, circuit 15s-LE19 (GN/BU), CJB side and ground.</div> <div><div>• Does the meter display battery voltage?</div><div>→ Yes<div>GO to G6.</div></div><div>→ No<div>INSTALL A NEW dipped beam relay. CHECK the operation of the system.</div></div></div>
G6: CHECK CONTROL CIRCUIT 15S-LE19 (GN/BU) FOR SHORT TO BATTERY VOLTAGE	
	1 Ignition switch in position 0.
	2 Disconnect steering column multifunction switch from connector C357.
	3 Ignition switch in position II.

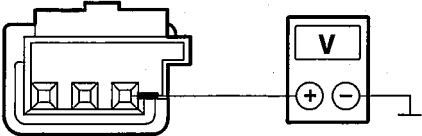
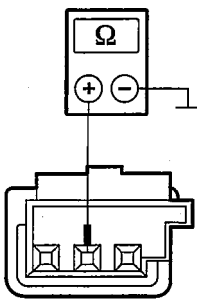
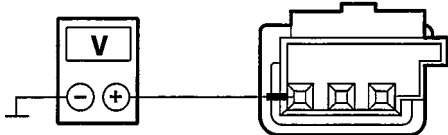
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0016044</p>	<p>4 Measure the voltage between steering column multifunction switch, connector C357, pin 9, circuit 15s-LEI9 (GN/BU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in the circuit between the steering column multifunction switch and the dipped beam relay using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No GO to G7.</p>
G7: CHECK THE HEADLAMP SWITCH	
	1 Ignition switch in position 0.
	2 Disconnect headlamp switch from connector C338.
	3 Connect Steering column multifunction switch to connector C357.
	a Connect Dipped beam relay to socket C417.
	5 Ignition switch in position II.
	<p>6 CHECK the dipped beam.</p> <ul style="list-style-type: none"> Does the dipped beam illuminate? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles without automatic headlamps: LOCATE and RECTIFY short to battery voltage in circuit 15s-LEI4 (GNIRD) between headlamp switch and steering column multifunction switch using the Wiring Diagrams. CHECK the operation of the system. Vehicles with automatic headlamps: GO to G8. <p>→ No INSTALL A NEW headlamp switch. CHECK the operation of the system.</p>
G8: CHECK THE GENERIC ELECTRONIC MODULE (GEM).	
	1 Ignition switch in position 0.
	2 Disconnect Generic electronic module (GEM) from connector C320.
	3 Ignition switch in position II.

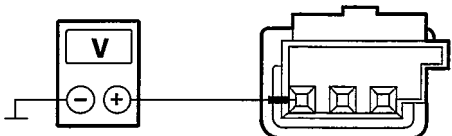
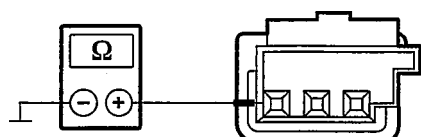
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> CHECK the dipped beam. <ul style="list-style-type: none"> Does the dipped beam illuminate? → Yes LOCATE and RECTIFY the short to battery voltage in the circuits connected to the headlamp switch, connector C338, pin 6 using the Wiring Diagrams. CHECK the operation of the system. → No RENEW the generic electronic module (GEM). CHECK the operation of the system.
G9: DETERMINE THE FAULT CONDITION	
NOTE: Light up the rain sensor so that the automatic headlamps do not respond.	
	<input type="checkbox"/> Ignition switch in position II. <input type="checkbox"/> 2 Move the headlamp switch to the automatic headlamps and off positions in turn. <input type="checkbox"/> 3 CHECK both headlamps in each position. <ul style="list-style-type: none"> Does the dipped beam illuminate continuously when the headlamp switch is in the off position? → Yes GO to G3. → No Dipped beam illuminates continuously when the automatic headlamps are SWITCHED ON: GO to G10.
G10: CHECK VOLTAGE SUPPLY OF RAIN SENSOR FOR OPEN CIRCUIT	
	<input type="checkbox"/> 1 Ignition switch in position 0. <input type="checkbox"/> Disconnect Rain sensor from connector C754. <input type="checkbox"/> Ignition switch in position II.

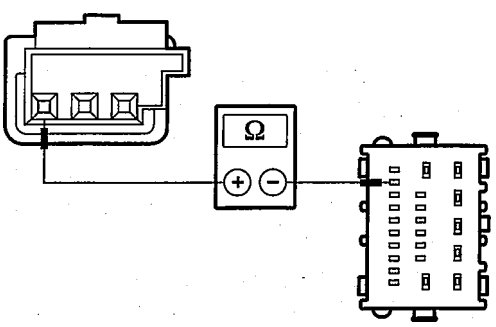
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0038444</p>	<p><input type="checkbox"/> Measure the voltage between the rain sensor, connector C754, pin 1, circuit 15-LE55 (GN/OG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to G11.</p> <p>→ No LOCATE and RECTIFY break in circuit between soldered connection S3 and the rain sensor using the Wiring Diagrams. CHECK the operation of the system.</p>
G11: CHECK THE GROUND CONNECTION OF THE RAIN SENSOR FOR OPEN CIRCUIT	
 <p>VFE0038446</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the rain sensor, connector C754, pin 2, circuit 31-LE55 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes GO to G12.</p> <p>→ No LOCATE and RECTIFY break in circuit between rain sensor and soldered connection S264 using the Wiring Diagrams. CHECK the operation of the system.</p>
G12: NARROW DOWN THE SOURCE OF THE SHORT TO BATTERY VOLTAGE	
 <p>VFE0038449</p>	<p>1 Ignition switch in position II.</p> <p><input type="checkbox"/> Measure the voltage between the rain sensor, connector C754, pin 3, circuit 8-LE55 (WH/BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to G13.</p> <p>→ No GO to G14.</p>
G13: CHECK SIGNAL CABLE OF RAIN SENSOR FOR SHORT TO BATTERY VOLTAGE	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Disconnect Generic electronic module (GEM) from connector C316.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0038449</p>	<p>3 Ignition switch in position II.</p> <p>Measure the voltage between the rain sensor, connector C754, pin 3, circuit 8-LE55 (WH/BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in the circuit between the generic electronic module (GEM) and the rain sensor using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No RENEW the generic electronic module (GEM). CHECK the operation of the system.</p>
G14: CHECK SIGNAL CABLE OF RAIN SENSOR FOR SHORT TO GROUND	
 <p>VFE64515</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the rain sensor, connector C754, pin 3, circuit 8-LE55 (WH/BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of more than 10,000 ohms measured? <p>→ Yes GO to G15.</p> <p>→ No LOCATE and RECTIFY the short to ground in the circuit between CJB and the rain sensor using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G15: CHECK SIGNAL CABLE OF RAIN SENSOR FOR OPEN CIRCUIT	
 <p>VFE64282</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the generic electronic module (GEM), connector C316, pin 22, circuit 8-LE55 (WHIBK), wiring harness side and the rain sensor, connector C754, pin 3, circuit 8-LE55 (WHIBK), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 ohms registered? <p>→ Yes RENEW the rain sensor. CHECK the operation of the system. If the concern remains, RENEW the generic electronic module (GEM). CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the rain sensor using the Wiring Diagrams. CHECK the operation of the system.</p>
G16: NARROW DOWN THE SOURCE OF THE SHORT TO BATTERY VOLTAGE	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect main beam relay from socket C411. 3 Ignition switch in position II. 4 CHECK the main beam. <ul style="list-style-type: none"> • Does the main beam illuminate? <p>→ Yes GO to G17.</p> <p>→ No GO to G18.</p>
G17: NARROW DOWN THE SOURCE OF THE SHORT TO BATTERY VOLTAGE	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect fuse F52 (10 A) (CJB). <input type="checkbox"/> Disconnect fuse F53 (10 A) (CJB). 4 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

5 CHECK the main beam.

- Does the main beam illuminate on one side?

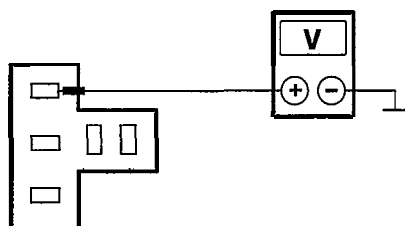
→ **Yes**

- left-hand main beam illuminates: LOCATE and RECTIFY the short to battery voltage in circuit 15s-LE15 (GN/BK), which is connected to the output of fuse F52 (10 A) (CJB), using the Wiring Diagrams. CHECK the operation of the system.

- Right-hand main beam lit: LOCATE and RECTIFY the short to battery voltage in circuit 15S-LE22 (GN/OG), which is connected to the output of fuse F53 (10 A) (CJB), using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY short to battery voltage in circuit 15S-DB6 (GN/WH) between main beam relay and CJB using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.

G18: CHECK THE VOLTAGE AT THE MAIN BEAM RELAY (CONTROL CIRCUIT)

VFE0033861

1 Measure the voltage between the main beam relay, socket C411, pin 1, circuit 15S-LE12 (GNNE), CJB side and ground.

- Does the meter display battery voltage?

→ **Yes**

GO to G19.

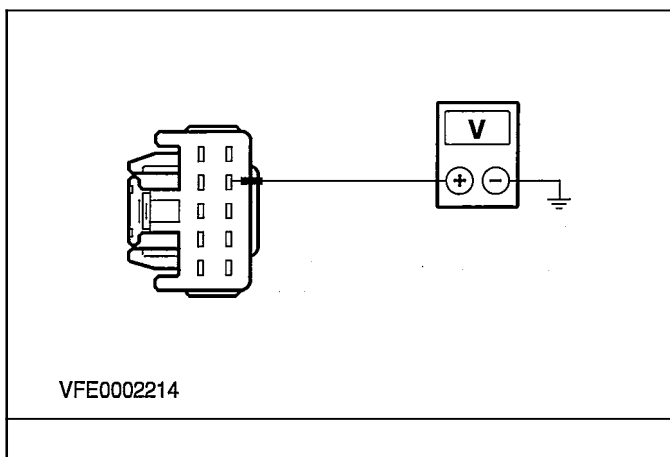
→ **No**

INSTALL A NEW main beam relay. CHECK the operation of the system.

G19: CHECK CONTROL CIRCUIT 15S-LE12 (GNNE) FOR SHORT TO BATTERY VOLTAGE**1** Ignition switch in position 0.**2** Disconnect steering column multifunction switch from connector C357.**3** Ignition switch in position II.

DIAGNOSIS AND TESTING

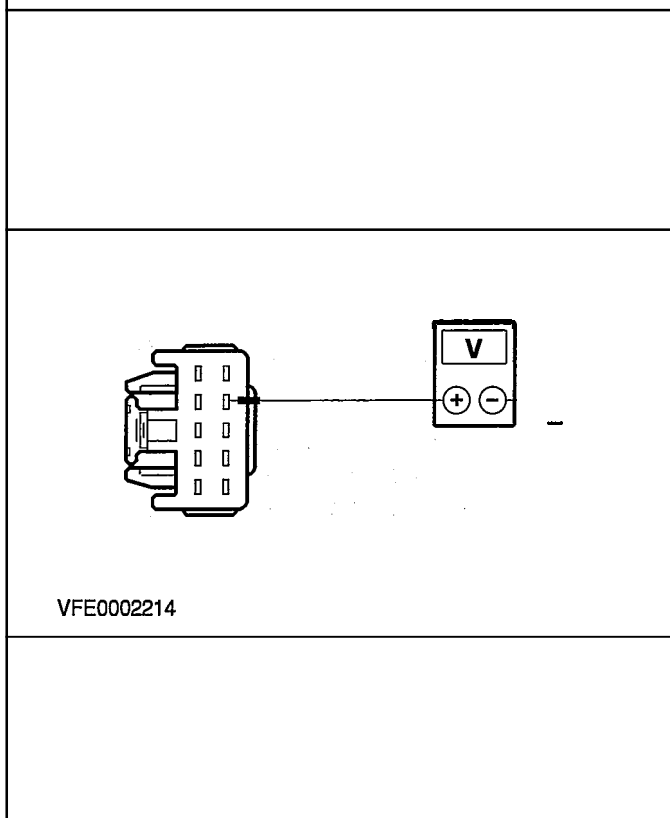
TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 4 Measure the voltage between the steering column multifunction switch, connector C357, pin 7, circuit 15S-LE12A (GNNE), wiring harness side and ground.
- Does the meter display battery voltage?
 - **Yes**
GO to G20.
 - **No**
INSTALL a new steering column multifunction switch. CHECK the operation of the system.

G20: CHECK INSTRUMENT CLUSTER



- 1 Ignition switch in position 0.
- 2 Disconnect Instrument cluster from connector C332.
- 3 Ignition switch in position II.
- 4 Measure the voltage between the steering column multifunction switch, connector C357, pin 7, circuit 15S-LE12A (GNNE), wiring harness side and ground.
- Does the meter display battery voltage?
 - **Yes**
LOCATE and RECTIFY short to battery voltage in the circuits connected to soldered connection S274 using the Wiring Diagrams. CHECK the operation of the system.
 - **No**
INSTALL a new instrument cluster. CHECK the operation of the system.
- REFER to: Instrument Cluster - Vehicles Built From: 1012005 (413-01, Diagnosis and Testing).

PINPOINT TEST O : THE HEADLAMP FLASHER IS INOPERATIVE

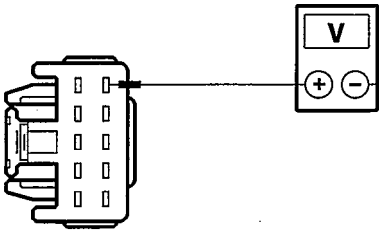
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

H1: DETERMINE THE FAULT CONDITION

	1 Ignition switch in position II.
	2 Determine the fault condition.

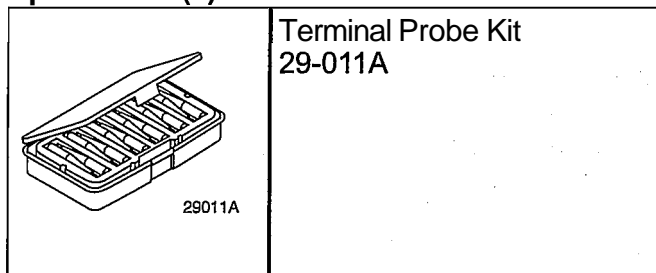
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div> <input type="checkbox"/> SWITCH ON main beam. </div> <div> <ul style="list-style-type: none"> Is the main beam on continuously? </div> <div> → Yes GO to H2. </div> <div> → No GO to Pinpoint Test D. </div>
H2: CHECK THE STEERING COLUMN MULTIFUNCTION SWITCH	
	<div> <input type="checkbox"/> 1 Ignition switch in position 0. </div> <div> <input type="checkbox"/> 2 Disconnect steering column multifunction switch from connector C357. </div> <div> <input type="checkbox"/> 3 Ignition switch in position II. </div>
 <p>VFE0016037</p>	<div> <input type="checkbox"/> 4 Measure the voltage between the steering column multifunction switch, connector C357, pin 6, circuit 15-LE14 (GN/RD), wiring harness side and ground. </div> <div> <ul style="list-style-type: none"> Does the meter display battery voltage? </div> <div> → Yes INSTALL a new steering column multifunction switch. CHECK the operation of the system. </div> <div> → No LOCATE and REPAIR the open circuit between the headlamp switch and the steering column multifunction switch using the Wiring Diagrams. CHECK the operation of the system. </div>

DIAGNOSIS AND TESTING

Stoplamps

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical (or mechanical) damage.

Visual Inspection

Mechanical	Electrical
<ul style="list-style-type: none"> • Stop lamp switch adjustment 	<ul style="list-style-type: none"> • Fuse(s) • Lamp(s) • Connector(s) • Switches • Wiring loom

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.
4. If the concern is not visually evident, refer to the Symptom Chart.

Inspection and Checking

NOTE:Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

NOTE:If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module. REFER to: (418-00)

Communications Network - Vehicles Built Up
To: 1012005 (Diagnosis and Testing),
Communications Network - Vehicles Built From:
1012005 (Diagnosis and Testing).

Symptom Chart**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> • Stop lamps are inoperative 	<ul style="list-style-type: none"> • Fuse • Circuit(s) • Stop lamp switch • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test A.
<ul style="list-style-type: none"> • One or more stop lamps are inoperative 	<ul style="list-style-type: none"> • Circuit(s) • Left/right-hand rear lamp assembly • Additional high-mounted stop lamp 	<ul style="list-style-type: none"> • GO to Pinpoint Test B.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Stop lamps illuminate continuously 	<ul style="list-style-type: none"> Circuit(s) Stop lamp switch Anti-lock brake system module (ABS) Electronic stability program (ESP) module Transmission control module (TCM) (vehicles with automatic clutch and gearshift actuation) Transmission selector lever assembly Trailer control unit Powertrain control module (PCM) 	<ul style="list-style-type: none"> GO to Pinpoint Test C.

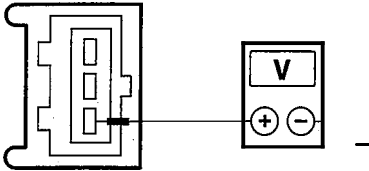
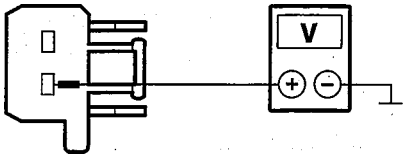
System Checks

NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST P : STOP LAMPS ARE INOPERATIVE

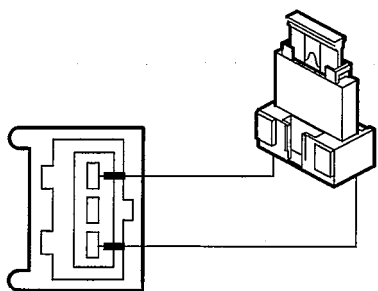
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK FUSE F45 (15 A) (CJB).	
	<ol style="list-style-type: none"> Ignition switch in position 0. Disconnect fuse F45 (15 A) (CJB). CHECK fuse F45 (15 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK?
	<ul style="list-style-type: none"> → Yes GO to A2. → No RENEW fuse F45 (15 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
A2: CHECK THE VOLTAGE SUPPLY TO FUSE F45 (15 A) (CJB)	
	<ol style="list-style-type: none"> Connect fuse F45 (15 A) (CJB). Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Measure the voltage between fuse F45 (15 A) (CJB) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A3.</p> <p>→ No LOCATE and RECTIFY the break in the voltage supply to fuse F45 (15 A) (CJB) using the Wiring Diagrams, if necessary CHECK and INSTALL A NEW CJB. CHECK the operation of the system.</p>
A3: CHECK VOLTAGE AT STOP LAMP SWITCH	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect stop lamp switch from connector C355.</p> <p>3 Ignition switch in position II.</p>
 <p>VFE0007210</p>	<p>4 Vehicles built before 1012004: Measure the voltage between the stop lamp switch, connector C355, pin 1, circuit 15-LG23 (GNNVH), wiring harness side and ground.</p>
 <p>VFE0033865</p>	<p><input type="checkbox"/> Vehicles built from 1012004: Measure the voltage between the stop lamp switch, connector C355, pin 1, circuit 15-LG23 (GNNVH), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A4.</p> <p>→ No LOCATE and RECTIFY the break in circuit 15-LG23 (GN/WH) between fuse F45 (15 A) (CJB) and the stop lamp switch using the Wiring Diagrams. CHECK the operation of the system.</p>
A4: EXCLUDE THE STOP LAMP SWITCH AS THE CAUSE OF THE FAULT	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

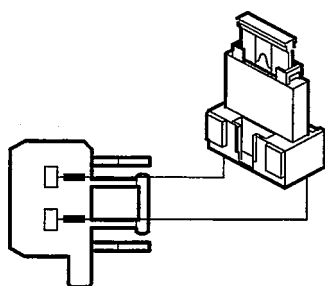
TEST CONDITIONS



VFE0014283

DETAILS/RESULTS/ACTIONS

- 2** Vehicles built before 10/12/004: Connect a fused jumper wire (15 A) at the stop lamp switch, connector C355, between pin 1, circuit 15-LG23 (GNNVH) and pin 3, circuit 15S-DA12 (GNNVH), wiring harness side.



VFE0038423

- 3** Vehicles built from 10/12/004: Connect a fused jumper wire (15 A) at the stop lamp switch, connector C355, between pin 1, circuit 15-LG23 (GNNVH) and pin 2, circuit 15S-DA12 (GNNVH), wiring harness side.

- 4** Ignition switch in position II.

- 5** CHECK the operation of the stop lamps.

- Do the stop lamps illuminate?

→ **Yes**

INSTALL A NEW stop lamp switch. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in circuit 15S-DA12 (GN/WH) between the stop lamp switch and soldered connection S12 using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST Q : ONE OR MORE STOP LAMPS ARE INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

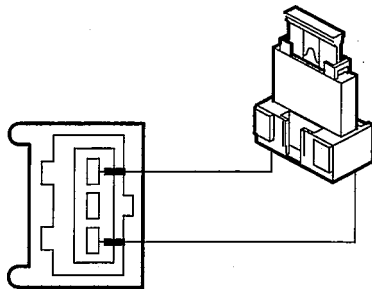
B1: DETERMINE THE FAULT CONDITION

- 1** Ignition switch in position 0.

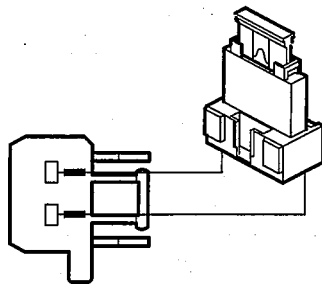
— Disconnect stop lamp switch from connector C355.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0014283



VFE0038423

DETAILS/RESULTS/ACTIONS

3 Vehicles built before 1012004: Connect a fused jumper wire (15 A) at the stop lamp switch, connector C355, between pin 1, circuit 15-LG23 (GNNVH) and pin 3, circuit 15S-DA12 (GNNVH), wiring harness side.

4 Vehicles built from 1012004: Connect a fused jumper wire (15 A) at the stop lamp switch, connector C355, between pin 1, circuit 15-LG23 (GNNVH) and pin 2, circuit 15S-DA12 (GNNVH), wiring harness side.

5 Ignition switch in position II.

6 DETERMINE the fault conditions.

7 CHECK the stop lamps.

- Is only one stop lamp inoperative?

→ **Yes**

- Left-hand stop lamp is inoperative: GO to B2.
- Right-hand stop lamp is inoperative: GO to B5.
- Additional high-mounted stop lamp is inoperative: GO to B8.

→ **No**

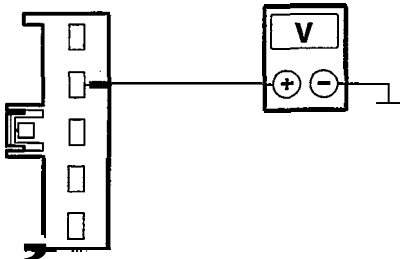
Left-hand stop lamp and additional high-mounted stop lamp inoperative: LOCATE and REPAIR the break in circuit 31-DA14 (BK) between soldered connection S24 and ground connection G17 using the Wiring Diagrams. CHECK the operation of the system.

B2: DETERMINE THE FAULT CONDITION

1 Ignition switch in position 0.

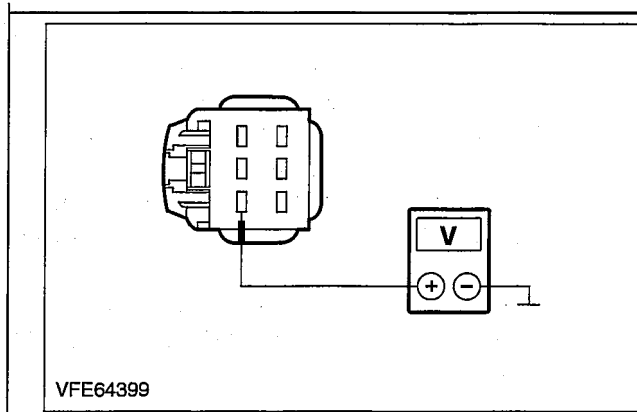
2 SWITCH ON parking lamps.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>CHECK left-hand rear parking lamp.</p> <ul style="list-style-type: none">Does the left-hand rear parking lamp illuminate? <p>→ Yes GO to B3.</p> <p>→ No GO to B4.</p>
B3: CHECK THE VOLTAGE SUPPLY TO THE LEFT-HAND STOP LAMP	
NOTE: The jumper wire used in the first step is still connected.	
	<p>Ignition switch in position 0.</p> <p>Disconnect Left-hand rear lamp assembly.</p> <ul style="list-style-type: none">Vehicles without trailer socket: from connector C333Vehicles with trailer socket: from connector C333a <p>Ignition switch in position II.</p>
 <p>VFE0033868</p>	<p>Vehicles built before 0812005, measure voltage between:</p> <ul style="list-style-type: none">Vehicles without trailer socket: left-hand rear lamp assembly, connector C333, pin 2, circuit 15S-LG14 (GN/RD), wiring harness side and ground.Vehicles with trailer socket, vehicles built before 0312004: left-hand rear lamp assembly, connector C333a, pin 2, circuit (BWRD), wiring harness side and ground.Vehicles with trailer socket, vehicles built after 0312004: left-hand rear lamp assembly, connector C333a, pin 2, circuit (GN), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- ☐ Vehicles built after 08/12/2005, measure voltage between:
- Vehicles without trailer socket: left-hand rear lamp assembly, connector C333, pin 3, circuit 15S-LG14 (GNIRD), wiring harness side and ground.
 - Vehicles with trailer socket: left-hand rear lamp assembly, connector C333a, pin 3, circuit (GN), wiring harness side and ground.
- Does the meter display battery voltage?

→ **Yes**

Check and if necessary RENEW the left-hand rear lamp assembly. CHECK the operation of the system.

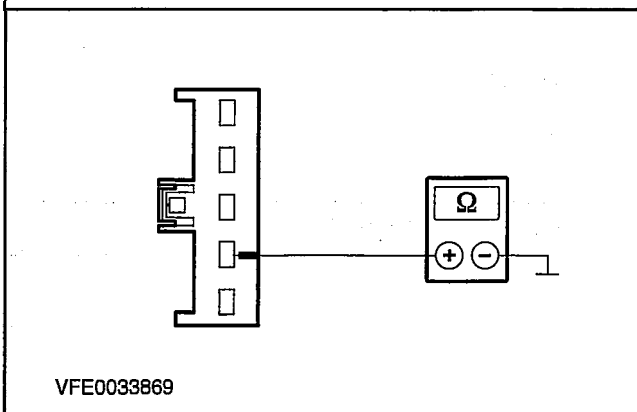
→ **No**

LOCATE and RECTIFY the break in the circuit(s) between soldered connection S12 and the left-hand rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.

B4: CHECK THE GROUND CONNECTION OF THE LEFT-HAND REAR LAMP ASSEMBLY

- 1** Ignition switch in position 0.

- ☐ Disconnect Left-hand rear lamp assembly.
- Vehicles without trailer socket: from connector C333
 - Vehicles with trailer socket: from connector C333a

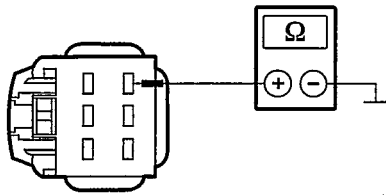


Measure the resistance between the left-hand rear lamp assembly, vehicles built before 08/12/2005:

- Vehicles without trailer socket: Connector C333, pin 4, circuit 31-LF23 (BK), wiring harness side and ground.
- Vehicles with 13-pin trailer socket, vehicles built after 03/2004: Connector C333a, pin 4, circuit (BN), wiring harness side and ground.
- All other vehicles with trailer socket: connector C333a, pin 4, circuit (GN), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE64389

DETAILS RESULTS ACTIONS

- 4** Measure the resistance between the left-hand rear lamp assembly, vehicles built after 08/12/2005:
- Vehicles without trailer socket: connector C333, pin 4, circuit 31-LF23 (BK), wiring harness side and ground.
 - Vehicles with 13-pin trailer socket: connector C333a, pin 4, circuit (BN), wiring harness side and ground.
 - All other vehicles with trailer socket: connector C333a, pin 4, circuit (GN), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
- **Yes**
CHECK and if necessary RENEW the left-hand rear lamp assembly. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit(s) between the left-hand rear lamp assembly and soldered connection S24 using the Wiring Diagrams. CHECK the operation of the system.

B5: DETERMINE THE FAULT CONDITION

- 1** SWITCH ON parking lamps.
- 2** CHECK right-hand rear parking lamp.
- Does the right-hand rear parking lamp illuminate?
- **Yes**
GO to B6.
- **No**
GO to B7.

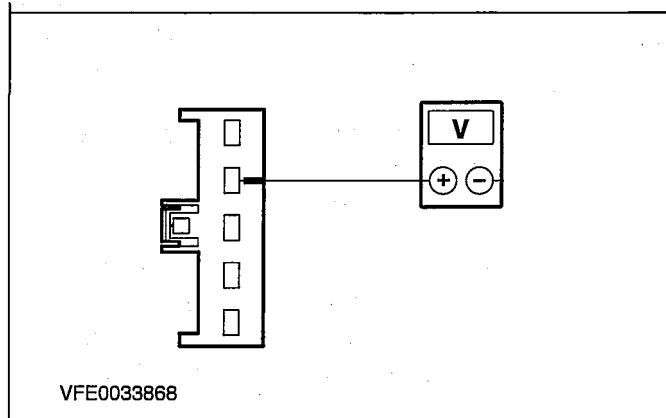
B6: CHECK THE VOLTAGE SUPPLY TO THE RIGHT-HAND STOP LAMP

NOTE: The jumper wire used in the first step is still connected.

- 1** Ignition switch in position 0.
- 2** Disconnect Right-hand rear lamp assembly.
- Vehicles without trailer socket: from connector C348
 - Vehicles with trailer socket: from connector C348a
- 3** Ignition switch in position II.

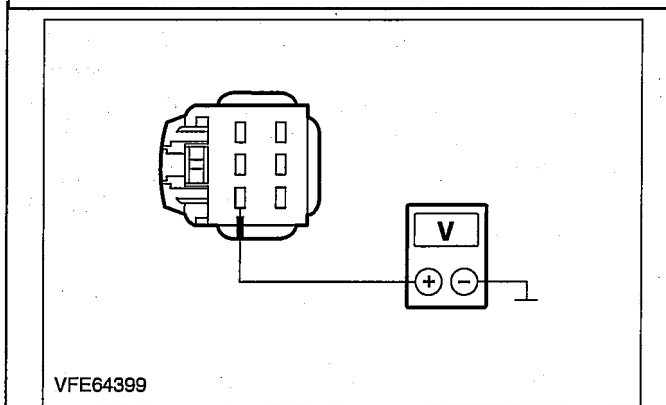
DIAGNOSIS AND TESTING

TEST CONDITIONS

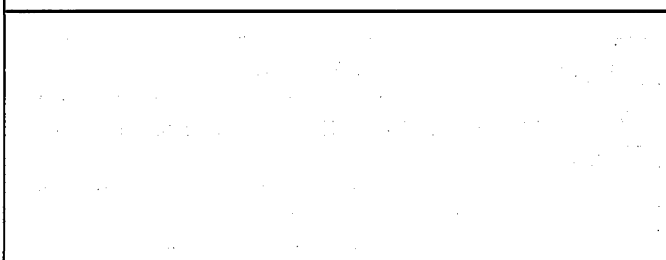


DETAILS/RESULTS/ACTIONS

- 4** Vehicles built before 0812005, measure voltage between:
- Vehicles without trailer socket: right-hand rear lamp assembly, connector C348, pin 2, circuit 15S-LG21 (GNIBK), wiring harness side and ground.
 - Vehicles with trailer socket, built before 0312004: right-hand rear lamp assembly, connector C348a, pin 2, circuit (GN), wiring harness side and ground.
 - Vehicles with trailer socket, built after 0312004: right-hand rear lamp assembly, connector C348a, pin 2, circuit (BWRD), wiring harness side and ground.



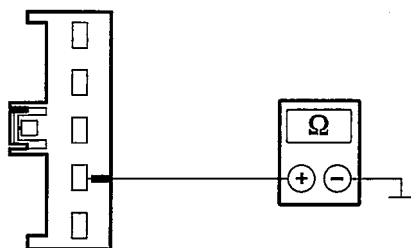
- 5** Vehicles built after 0812005, measure voltage between:
- Vehicles without trailer socket: right-hand rear lamp assembly, connector C348, pin 3, circuit 15S-LG21 (GNIBK), wiring harness side and ground.
 - Vehicles with trailer socket: right-hand rear lamp assembly, connector C348a, pin 3, circuit (BWRD), wiring harness side and ground.
- Does the meter display battery voltage?
- **Yes**
CHECK and if necessary RENEW the right-hand rear lamp assembly. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit(s) between soldered connection S12 and the right-hand rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.

B7: CHECK THE GROUND CONNECTION TO THE RIGHT-HAND REAR LAMP ASSEMBLY

- 1** Ignition switch in position 0.
- 2** Disconnect Right-hand rear lamp assembly.
- Vehicles without trailer socket: from connector C348
 - Vehicles with trailer socket: from connector C348a

DIAGNOSIS AND TESTING

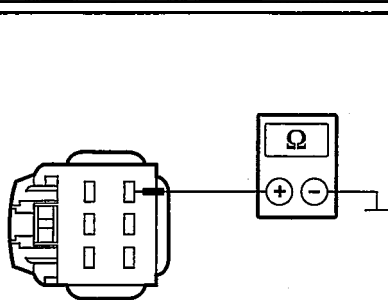
TEST CONDITIONS



VFE0033869

DETAILS/RESULTS/ACTIONS

- 3** Measure the resistance between the right-hand rear lamp assembly, vehicles built before 0812005:
- Vehicles without trailer socket: connector C348, pin 4, circuit 31-LF24 (BK), wiring harness side and ground.
 - Vehicles with trailer socket, built before 0312004: connector C348a, pin 4, circuit (BK), wiring harness side and ground.
 - Vehicles with trailer socket, built after 0312004: connector C348a, pin 4, circuit (BN), wiring harness side and ground.



VFE64389

- 4** Measure the resistance between the right-hand rear lamp assembly, vehicles built after 0812005:
- Vehicles without trailer socket: connector C348, pin 4, circuit 31-LF24 (BK), wiring harness side and ground.
 - Vehicles with trailer socket: connector C348a, pin 4, circuit (BN), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
- **Yes**
CHECK and if necessary RENEW the right-hand rear lamp assembly. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit(s) between the right-hand rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.

B8: CHECK THE VOLTAGE TO THE ADDITIONAL HIGH-MOUNTED STOP LAMP

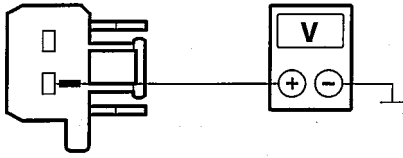
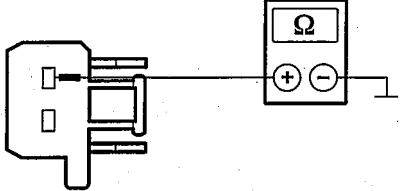
NOTE: The jumper wire used in the first step is still connected.

☐ Ignition switch in position 0.

☐ Disconnect Additional high-mounted stop lamp from connector C550.

3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033865</p>	<p>4 Measure the voltage between the additional high-mounted stop lamp, connector C550, pin 1:</p> <ul style="list-style-type: none"> – Vehicles without anti-theft alarm system: circuit 15S-LG6 (GNNE), wiring harness side and ground. – Vehicles with anti-theft alarm system: circuit 31-LG6S (BK), wiring harness side and ground. <p>• Does the meter display battery voltage?</p> <p>→ Yes GO to B9.</p> <p>→ No LOCATE and RECTIFY the break in the circuit(s) between soldered connection S12 and the additional high-mounted stop lamp using the Wiring Diagrams. CHECK the operation of the system.</p>
B9: CHECK GROUND CONNECTION OF ADDITIONAL HIGH-MOUNTED STOP LAMP	
 <p>VFE0033866</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the additional high-mounted stop lamp, connector C550, pin 2, circuit 31-LG6 (BK), wiring harness side and ground.</p> <p>• Is a resistance of less than 2 ohms registered?</p> <p>→ Yes CHECK and if necessary RENEW the additional high-mounted stop lamp. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the additional high-mounted stop lamp and soldered connection S201 using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST R : STOP LAMPS ILLUMINATE CONTINUOUSLY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C1: EXCLUDE THE STOP LAMP SWITCH AS THE CAUSE OF THE FAULT	
	<input type="checkbox"/> Ignition switch in position 0.
	2 Disconnect stop lamp switch from connector C355.
	<input type="checkbox"/> Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div>4</div> <div>CHECK the stop lamps.</div> <ul style="list-style-type: none"> Do the stop lamps illuminate continuously? <div>→ Yes</div> <ul style="list-style-type: none"> Vehicles with manual transmission: GO to C4. Vehicles with 4-speed automatic transmission (AW81-40-LE): GO to C2. Vehicles with Durashift EST GO to C3. <div>→ No</div> <div>INSTALL A NEW stop lamp switch. CHECK the operation of the system.</div>
C2: RULE OUT TRANSMISSION SELECTOR LEVER ASSEMBLY AS POSSIBLE CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	<div>1</div> <div>Ignition switch in position 0.</div>
	<div>2</div> <div>Disconnect fuse F33 (7.5 A) (CJB).</div>
	<div>3</div> <div>Ignition switch in position II.</div>
	<div>CHECK the stop lamps.</div> <ul style="list-style-type: none"> Do the stop lamps illuminate continuously? <div>→ Yes</div> <div>GO to C4.</div> <div>→ No</div> <div>INSTALL A NEW transmission selector lever assembly. CHECK the operation of the system.</div>
C3: RULE OUT THE TRANSMISSION CONTROL MODULE (TCM) AS POSSIBLE CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	<div>1</div> <div>Ignition switch in position 0.</div>
	<div>2</div> <div>Disconnect Fuse.</div> <ul style="list-style-type: none"> Vehicles built before 0812005: F41 (7.5 A) (CJB) Vehicles built after 0812005: F40 (7.5 A) (CJB)
	<div>3</div> <div>Disconnect fuse FB (60 A) (BJB).</div>
	<div>CHECK the stop lamps.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>5 CHECK the stop lamps.</p> <ul style="list-style-type: none"> Do the stop lamps illuminate continuously? <p>→ Yes GO to C4.</p> <p>→ No CHECK the transmission control unit (TCM) using WDS and INSTALL A NEW ONE if necessary. CHECK the operation of the system.</p>
C4: DETERMINE THE MODEL VARIANT	
	<p><input type="checkbox"/> Ignition switch in position 0.</p>
	<p>2 Connect following components.</p> <ul style="list-style-type: none"> Vehicles with 4-speed automatic transmission (AW81-40-LE): fuse F33 (7.5 A) (CJB) Vehicles with Durashift EST, built before 0812005: fuse F41 (7.5 A) (CJB) Vehicles with Durashift EST, built after 0812005: fuse F40 (7.5 A) (CJB) Vehicles with Durashift EST fuse FB (60 A) (BJB)
	<p>3 DETERMINE the model variant.</p> <ul style="list-style-type: none"> Is the vehicle fitted with an anti-lock brake system (ABS) or electronic stability program (ESP)? <p>→ Yes GO to C5.</p> <p>→ No GO to C6.</p>
C5: ELIMINATE THE ABS MODULE/ESP MODULE AS CAUSE FOR THE SHORT TO BATTERY VOLTAGE	
	<p><input type="checkbox"/> Disconnect fuse F5 (20 A) (CJB).</p>
	<p>2 Disconnect fuse F6 (30 A) (CJB).</p>
	<p><input type="checkbox"/> Disconnect fuse F37 (3 A) (CJB).</p>
	<p>4 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>5 CHECK the stop lamps.</p> <ul style="list-style-type: none"> Do the stop lamps illuminate continuously? <p>→ Yes GO to C6.</p> <p>→ No CHECK the ABS module/ESP module using WDS and RENEW if necessary. REFER to: Anti-Lock Control (206-09A, Diagnosis and Testing), Anti-Lock Control - Traction Control (206-09B, Diagnosis and Testing), Anti-Lock Control - Stability Assist (206-09C, Diagnosis and Testing).</p> <p>CHECK operation of system.</p>
C6: DETERMINE THE MODEL VARIANT	
	1 Ignition switch in position 0.
	2 Connect fuse F5 (20 A) (CJB).
	3 Connect fuse F6 (30 A) (CJB).
	<input type="checkbox"/> Connect fuse F37 (3 A) (CJB).
	<p>5 DETERMINE the model variant.</p> <ul style="list-style-type: none"> Is the vehicle equipped with a trailer socket? <p>→ Yes GO to C7.</p> <p>→ No GO to C8.</p>
C7: RULE OUT TRAILER CONTROL UNIT AS CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	<p>1 Disconnect following components.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: fuse F31 (20 A) (CJB) Vehicles built from 1012002 to 1012004: fuse F56 (20 A) (CJB) Vehicles built from 1012004: fuse F3 (20 A) (CJB)
	2 Ignition switch in position II.

DIAGNOSIS AND TESTING

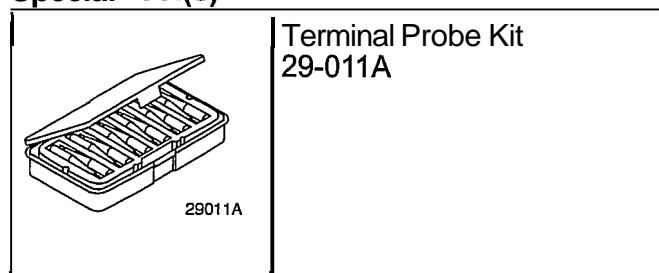
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p><input checked="" type="checkbox"/> 3 CHECK the stop lamps.</p> <ul style="list-style-type: none"> Do the stop lamps illuminate continuously? <p>→ Yes GO to C8.</p> <p>→ No INSTALL A NEW trailer control unit. CHECK the operation of the system.</p>
C8: RULE OUT THE POWERTRAIN CONTROL MODULE (PCM) AS POSSIBLE CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	<p><input checked="" type="checkbox"/> 1 Ignition switch in position 0.</p>
	<p><input checked="" type="checkbox"/> 2 Connect following components.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: fuse F31 (20 A) (CJB) Vehicles built from 1012002 to 1012004: fuse F56 (20 A) (CJB) Vehicles built from 1012004: fuse F3 (20 A) (CJB)
	<p><input checked="" type="checkbox"/> 3 Disconnect Powertrain control module.</p> <ul style="list-style-type: none"> 1.25L 1.4L 1.6L Duratec-I6V (Sigma): from connector C343 1.4L Duratorq-TDCi (DV): from connector C371 1.6L Duratorq-TDCi (DV): from connector C384 2.0L Duratec-ST (MI4) from connector C380
	<p><input type="checkbox"/> Ignition switch in position II.</p>
	<p><input type="checkbox"/> CHECK the stop lamps.</p> <ul style="list-style-type: none"> Do the stop lamps illuminate continuously? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S12 using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No CHECK the PCM module using WDS, INSTALL A NEW ONE if necessary. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

Turn Signal and Hazard Lamps

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)



1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection

Electrical
<ul style="list-style-type: none"> • Fuse(s) • Lamp(s) • Connector(s). • Switches • Wiring loom • Trailer control unit

Inspection and Checking

NOTE:Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

NOTE:If the generic electronic module (GEM) is changed, the new one must be configured. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module. REFER to:

Module Configuration (418-01, Diagnosis and Testing),
Generic Electronic Module (GEM) - Vehicles Built Up To: I012005 (419-10, Diagnosis and Testing),
Generic Electronic Module (GEM) - Vehicles Built From: I012005 (419-10, Diagnosis and Testing).

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.
4. If the concern is not visually evident, refer to the Symptom Chart.

Symptom Chart

Symptom Chart

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> • All turn signal lamps inoperative/flash continuously/illuminate continuously 	<ul style="list-style-type: none"> • Circuit(s) • Fuse(s) • Turn signal switch • Central junction box (CJB) • Generic Electronic Module (GEM) 	<ul style="list-style-type: none"> • GO to Pinpoint Test A.
<ul style="list-style-type: none"> • One/several turn signal lamps are inoperative 	<ul style="list-style-type: none"> • Circuit(s) • Headlamp • Turn signal lamp (side) • Left/right-hand rear lamp assembly • Trailer control unit 	<ul style="list-style-type: none"> • GO to Pinpoint Test B.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> One or more turn signal lamps flash continuously: 	<ul style="list-style-type: none"> Circuit(s) Headlamp Turn signal lamp (side) Left/right-hand rear lamp assembly Trailer control unit 	<ul style="list-style-type: none"> GO to Pinpoint Test C.
<ul style="list-style-type: none"> One/several turn signal lamps illuminate continuously 	<ul style="list-style-type: none"> Circuit(s) Headlamp Turn signal lamp (side) Left/right-hand rear lamp assembly Trailer control unit 	<ul style="list-style-type: none"> GO to Pinpoint Test D.
<ul style="list-style-type: none"> The hazard warning system is not working properly. 	<ul style="list-style-type: none"> Circuit(s) Fuse(s) Hazard warning lamp switch Central junction box (CJB) Generic Electronic Module (GEM) 	<ul style="list-style-type: none"> GO to Pinpoint Test E.

System Check

NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST S : ALL TURN SIGNAL LAMPS INOPERATIVE/FLASH CONTINUOUSLY/ILLUMINATE CONTINUOUSLY

TEST CONDITIONS	DETAILS	RESULTS	ACTIONS
A1: CHECK FUSE F24 (20 A) (CJB).			
	1	Ignition switch in position 0.	
	2	Disconnect Fuse F24 (20 A) (CJB).	
	3	CHECK Fuse F24 (20 A) (CJB).	
		<ul style="list-style-type: none">Is the fuse OK.? <p>→ Yes GO to A2.</p> <p>→ No RENEW fuse F24 (20 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>	
A2: CHECK THE VOLTAGE SUPPLY TO FUSE F24 (20A) (CJB) FOR OPEN CIRCUIT			
	1	Connect Fuse F24 (20 A) (CJB).	
	2	Ignition switch in position II.	

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSRESULTSIACTIONS
	<p>3 Measure the voltage between fuse F24 (20 A) (CJB) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to A3.</p> <p>→ No LOCATE AND RECTIFY the break in the voltage supply of fuse F24 (20 A) (CJB) using the Wiring Diagrams. CHECK and RENEW the CJB if necessary. CHECK the operation of the system.</p>
A3: CHECK FUSE F25 (15 A) (CJB).	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect fuse F25 (15 A) (CJB).</p> <p>3 CHECK fuse F25 (15 A) (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK.? <p>→ Yes GO to A4.</p> <p>→ No RENEW fuse F25 (15 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>
A4: CHECK THE VOLTAGE SUPPLY TO FUSE F25 (15A) (CJB) FOR OPEN CIRCUIT	
	<p>1 Connect fuse F25 (15 A) (CJB).</p> <p>2 Ignition switch in position II.</p> <p>3 Measure the voltage between fuse F25 (15 A) (CJB) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to A5.</p> <p>→ No LOCATE AND RECTIFY the break in the voltage supply of fuse F25 (15 A) (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system.</p>
A5: CHECK FUSE F27 (CJB).	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS**

- 2** Disconnect fuse F27 (CJB).
- Vehicles built before 0112004: 10 A
 - Vehicles built from 0112004: 15 A

- 3** CHECK fuse F27 (CJB).
- Vehicles built before 0112004: 10 A
 - Vehicles built from 0112004: 15 A
- Is the fuse OK.?
- **Yes**
GO to A6.
- **No**
RENEW fuse F27 (10 A or 15 A) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.

A6: CHECK THE VOLTAGE SUPPLY TO FUSE F27 (CJB) FOR OPEN CIRCUIT

- Connect fuse F27 (CJB).
- Vehicles built before 0112004: 10 A
 - Vehicles built from 0112004: 15 A

- 2** Ignition switch in position II.

- 3** Measure the voltage between fuse:
- Vehicles built before 0112004: F27 (10 A) (CJB) and ground.
 - Vehicles built from 0112004: F27 (15 A) (CJB) and ground.
- Is battery voltage measured?
- **Yes**
GO to A7.
- **No**
LOCATE and RECTIFY the break in the voltage supply to fuse F27 (CJB) using the Wiring Diagrams. If necessary CHECK and RENEW the CJB. CHECK the operation of the system.

A7: CHECK FUSE F38 (7.5 A) (CJB).

- ☐ Ignition switch in position 0.

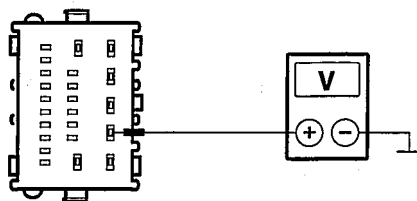
- 2** Disconnect fuse F38 (7.5 A) (CJB).

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> CHECK fuse F38 (7.5 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK.? → Yes GO to A8. <ul style="list-style-type: none"> → No RENEW fuse F38 (7.5 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
A8: CHECK THE VOLTAGE SUPPLY TO FUSE F38 (7.5 A) (CJB) FOR OPEN CIRCUIT	
	1 Connect fuse F38 (7.5 A) (CJB).
	2 Ignition switch in position II.
	3 Measure the voltage between fuse F38 (7.5 A) (CJB) and ground. <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to A9. <ul style="list-style-type: none"> → No LOCATE AND RECTIFY the break in the voltage supply to fuse F38 (7.5 A) (CJB) using the Wiring Diagrams. If necessary CHECK and RENEW the CJB. CHECK the operation of the system.
A9: CHECK THE VOLTAGE SUPPLY TO THE GENERIC ELECTRONIC MODULE (GEM)	
	1 Ignition switch in position 0.
	2 Disconnect Generic electronic module (GEM) from connector C318.
	3 Disconnect Generic electronic module (GEM) from connector C319.
	4 Ignition switch in position II.

DIAGNOSIS AND TESTING

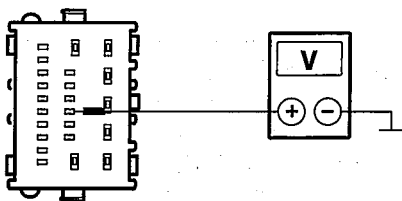
TEST CONDITIONS



VFE0028502

DETAILS/RESULTS/ACTIONS

- 5 Measure the voltage between the generic electronic module (GEM), connector C318, pin 2, circuit 29-AA80 (OG/WH), wiring harness side and ground.



VFE0028650

- 6 Measure the voltage between the generic electronic module (GEM), connector C319, pin 10, circuit 15-DK20 (GN/OG), wiring harness side and ground.

- Is battery voltage measured in all cases?

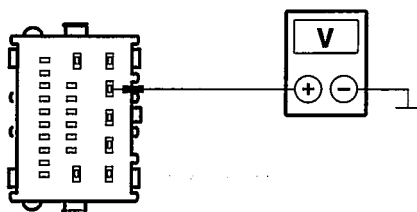
→ Yes

- Vehicles built before 0812005: GO to A10.
- Vehicles built from 0812005: GO to A11.

→ No

LOCATE and RECTIFY the break in the relevant circuit between the fuse and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.

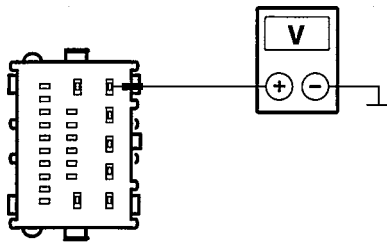
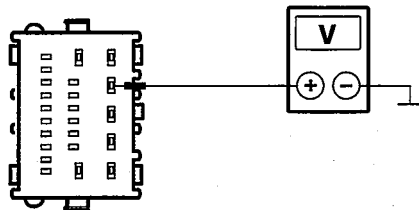
A10: CHECK VOLTAGE SUPPLY TO THE GENERIC ELECTRONIC MODULE (GEM), VEHICLES BUILT BEFORE 0812005



VFE0028519

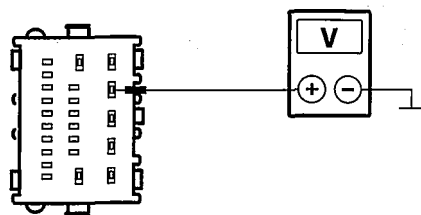
- 1 Measure the voltage between the generic electronic module (GEM), connector C318, pin 4, circuit 29-LG26 (OG), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS/RESULTS/ACTIONS	
<div></div> <div>VFE0029403</div>		<div>2 Measure the voltage between the generic electronic module (GEM), connector C319, pin 5, circuit 29-GJ8 (OG), wiring harness side and ground.</div> <div><div>Is battery voltage measured in all cases?</div><div>→ Yes GO to A12.</div><div>→ No LOCATE and RECTIFY the break in the relevant circuit between the fuse and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.</div></div>	
A II : CHECK VOLTAGE SUPPLY TO THE GENERIC ELECTRONIC MODULE (GEM), VEHICLES BUILT FROM 0812005			
		1 Ignition switch in position 0.	
		<input type="checkbox"/> Disconnect Generic electronic module (GEM) from connector C316.	
		3 Disconnect Generic electronic module (GEM) from connector C317.	
		4 Ignition switch in position II.	
<div></div> <div>VFE0028519</div>		5 Measure the voltage between the generic electronic module (GEM), connector C316, pin 4, circuit 29-LG26 (OG), wiring harness side and ground.	

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0028519

DETAILS/RESULTS/ACTIONS

- 6 Measure the voltage between the generic electronic module (GEM), connector C317, pin 4, circuit 29-GJ8 (OG), wiring harness side and ground.

- Is battery voltage measured in all cases?

→ Yes

GO to A12.

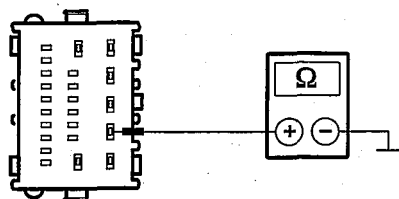
→ No

LOCATE and RECTIFY the break in the relevant circuit between the fuse and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.

A12: CHECK THE GROUND CONNECTION OF THE GENERIC ELECTRONIC MODULE (GEM).

- 1 Ignition switch in position 0.

- 2 Disconnect Generic electronic module (GEM) from connector C320.



VFE0028651

- 3 Measure the resistance between the generic electronic module (GEM), connector C320, pin 2, circuit 91-DK20 (BWRD), wiring harness side and ground.

- Is a resistance of less than 2 ohms registered?

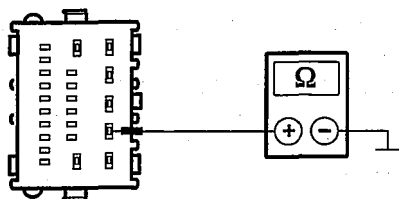
→ Yes

GO to A13.

→ No

LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and ground connection G14 using the Wiring Diagrams. CHECK the operation of the system.

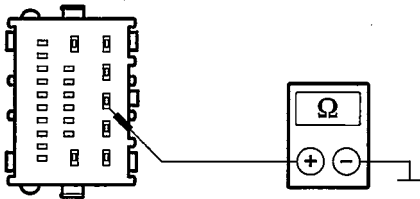
A13: CHECK THE GROUND CONNECTION OF THE GENERIC ELECTRONIC MODULE (GEM).



VFE0028651

- 1 Vehicles built before 08/2005: Measure the resistance between the generic electronic module (GEM), connector C316, pin 2, circuit 31-DK20 (BK), wiring harness side and ground.

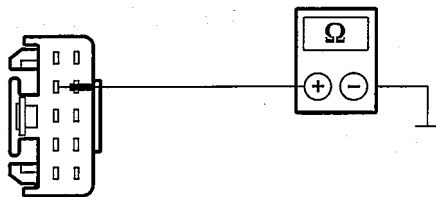
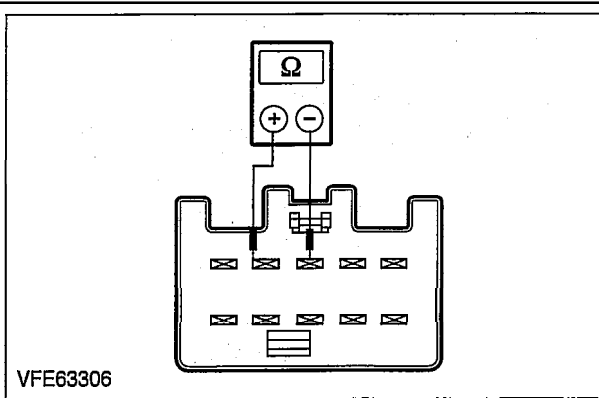
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0038372</p>	<p>2 Vehicles built from 0812005: Measure the resistance between the generic electronic module (GEM), connector C318, pin 3, circuit 31-DK20 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes GO to A14.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between generic electronic module (GEM) and soldered connection S15 using the Wiring Diagrams. CHECK the operation of the system.</p>
A14: DETERMINE THE FAULT CONDITION	
	<p>1 Connect Generic Electronic Module (GEM).</p> <ul style="list-style-type: none"> Vehicles built before 0812005: to connectors C316, C318, C319 and C320 Vehicles built from 0812005: to connectors C316, C317, C318, C319 and C320
	<p>2 Ignition switch in position II.</p>
	<p>3 Switch off the turn signals.</p>
	<p><input type="checkbox"/> CHECK the turn signal lamps.</p> <ul style="list-style-type: none"> Do all turn signal lamps on the left and right-hand side illuminate continuously? <p>→ Yes RENEW the generic electronic module (GEM). CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> All turn signal lamps are inoperative: GO to A15. All turn signal lamps flash continuously: GO to A18.
A15: DETERMINE THE FAULT CONDITION	
	<p>1 Ignition switch in position II.</p>
	<p>2 CHECK the turn signal lamps.</p>
	<p>3 Switch on LEFT-HAND TURN SIGNAL.</p>

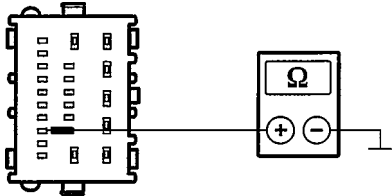
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

	<p>4 Switch on RIGHT-HAND TURN SIGNAL.</p> <ul style="list-style-type: none"> Are all of the turn signal lamps inoperative? <p>→ Yes GO to A16.</p> <p>→ No GO to Pinpoint Test B.</p>
A16: CHECK GROUND CONNECTION OF TURN SIGNAL LAMP SWITCH FOR OPEN CIRCUIT	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect Turn signal switch from connector C357.</p>
 <p>VFE0016129</p>	<p><input type="checkbox"/> Measure the resistance between the turn signal switch, connector C357, pin 2, circuit 31-LG27 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes GO to A17.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the turn signal switch and soldered connection S263 using the Wiring Diagrams. CHECK the operation of the system.</p>
A17: EXCLUDE THE TURN SIGNAL SWITCH AS THE CAUSE OF THE FAULT	
 <p>VFE63306</p>	<p>1 SWITCH ON the right-hand turn signal.</p> <p><input type="checkbox"/> Measure the resistance at the turn signal switch, connector C357 between pin 2, component side and pin 3, component side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes RENEW the generic electronic module (GEM). CHECK the operation of the system.</p> <p>→ No RENEW the turn signal switch. CHECK the operation of the system.</p>
A18: CHECK THE HAZARD WARNING LAMP SWITCH	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Hazard warning lamp switch.</p> <ul style="list-style-type: none"> Vehicles built before 0812005: from connector C321 Vehicles built from 0812005: from connector C341

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Ignition switch in position II.</p> <p>4 CHECK the turn signal lamps.</p> <ul style="list-style-type: none"> Do all turn signal lamps flash continuously? <p>→ Yes GO to A19.</p> <p>→ No RENEW the hazard warning lamp switch. CHECK the operation of the system.</p>
A19: CHECK CIRCUIT 31S-LG8 (BK/OG) FOR SHORT TO GROUND	
	<p>1 Disconnect Generic electronic module (GEM) from connector C320.</p>
 <p>VFE0033867</p>	<p>2 Measure the resistance between the generic electronic module (GEM), connector C320, pin 16, circuit 31S-LG8 (BWOOG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of more than 10,000 ohms measured? <p>→ Yes RENEW the generic electronic module (GEM). CHECK the operation of the system.</p> <p>→ No</p>
	<p>LOCATE AND RECTIFY the short to ground in the circuit between the hazard warning lamp switch and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST T : ONE/SEVERAL TURN SIGNAL LAMPS ARE INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
BI: DETERMINE THE FAULT CONDITION	
	1 Ignition switch in position II.
	2 CHECK the turn signal lamps.
	<input type="checkbox"/> DETERMINE which turn signal lamp is inoperative.
	4 Switch on LEFT-HAND TURN SIGNAL.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>5 Switch on RIGHT-HAND TURN SIGNAL.</p> <ul style="list-style-type: none"> Is one left-hand turn signal lamp inoperative? <p>→ Yes</p> <ul style="list-style-type: none"> Left-hand (side) turn signal lamp and left-hand front turn signal lamp are inoperative: GO to B2. Left-hand rear turn signal lamp is inoperative: GO to B3. Left-hand rear turn signal lamp and right-hand rear turn signal lamp are inoperative, vehicles with trailer socket: GO to B7. Left-hand front turn signal lamp is inoperative: GO to B11. Left-hand (side) turn signal lamp is inoperative: GO to B12. <p>→ No</p> <ul style="list-style-type: none"> Right-hand (side) turn signal lamp and right-hand front turn signal lamp are inoperative: GO to B13. Right-hand rear turn signal lamp is inoperative: GO to B14. Right-hand front turn signal lamp is inoperative: GO to B18. Right-hand (side) turn signal lamp is inoperative: GO to B19.
B2: CHECK GROUND CONNECTION OF LEFT-HAND FRONT TURN SIGNAL LAMPS FOR OPEN CIRCUIT	
	<p>Ignition switch in position 0.</p> <p>2 SWITCH ON the parking lamps.</p> <p>CHECK left-hand front parking lamp.</p> <ul style="list-style-type: none"> Does the parking lamp illuminate? <p>→ Yes</p> <p>RENEW the generic electronic module (GEM). CHECK the operation of the system.</p> <p>→ No</p> <p>LOCATE and RECTIFY the break in circuit 31-DA1 (BK) between soldered connection S10 and ground connection G4 using the Wiring Diagrams. CHECK the operation of the system.</p>
B3: CHECK THE GROUND CONNECTION OF THE LEFT-HAND REAR LAMP ASSEMBLY	
	<p>Ignition switch in position 0.</p> <p><input type="checkbox"/> SWITCH ON the parking lamps.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

3 CHECK rear parking lamp.

Does the parking lamp illuminate?

→ **Yes**

GO to B4.

→ **No**

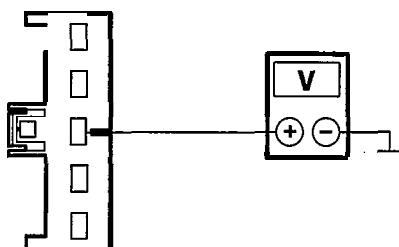
- Vehicles without trailer socket: LOCATE and RECTIFY the break in circuit 31-LF23 (BK) between the rear lamp assembly and soldered connection S24 using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

- Vehicles with 13-pin trailer socket, built from 0312004: LOCATE and RECTIFY the break in the circuit (BN) between the rear lamp assembly and soldered connection S1008 using the wiring diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

- All other vehicles with trailer socket: LOCATE and RECTIFY the break in circuit (GN) or 31-LF23 (BK) between the rear lamp assembly and soldered connection S24 using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

B4: CHECK VOLTAGE SUPPLY TO LEFT-HAND REAR LAMP ASSEMBLY**1** Disconnect Rear lamp assembly.

- Vehicles without trailer socket: from connector C333
- Vehicles with trailer socket: from connector C333a

2 Ignition switch in position II.☐ Switch on LEFT-HAND TURN SIGNAL.

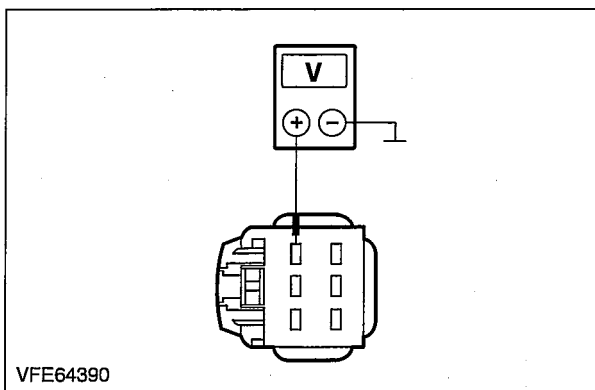
VFE0033870

4 Vehicles built before 0812005: Measure voltage between left-hand rear lamp assembly

- Vehicles without trailer socket: connector C333, pin 3, circuit 49-LG12 (BU), wiring harness side and ground.
- Vehicles with trailer socket: connector C333a, pin 3, circuit (GY/WH), wiring harness side and ground.

DIAGNOSIS AND TESTING

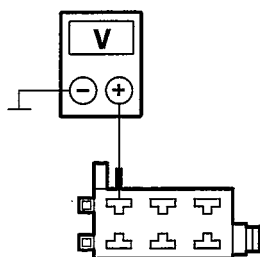
TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 5 Vehicles built from 0812005: Measure voltage between left-hand rear lamp assembly
- Vehicles without trailer socket: connector C333, pin 1, circuit 49-LG12 (BU), wiring harness side and ground.
 - Vehicles with trailer socket: connector C333a, pin 1, circuit (GY/WH), wiring harness side and ground.
- Does the meter display fluctuating battery voltage?
- **Yes**
- CHECK and if necessary RENEW the rear lamp assembly. CHECK the operation of the system.
- **No**
- Vehicles without trailer socket: LOCATE and REPAIR the break in circuit 49-LG12 (BU), between the generic electronic module (GEM) and the rear lamp assembly, using the Wiring Diagrams. CHECK and RENEW generic electronic module (GEM) if necessary. CHECK the operation of the system.
 - Vehicles with trailer socket: GO to B5.

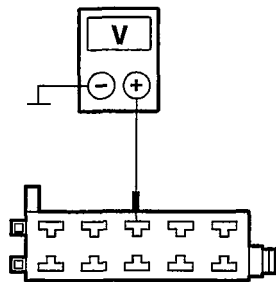
B5: CHECK THE CONTROL CIRCUIT 49-LG12 (BU) OR (WH) AT THE TRAILER CONTROL UNIT FOR OPEN CIRCUIT



- 1 Ignition switch in position 0.
- 2 Disconnect Trailer control unit.
- Vehicles built before 0312004: from connector C1030
 - Vehicles built from 0312004: from connector C1041
- 3 Ignition switch in position II.
- 4 Switch on LEFT-HAND TURN SIGNAL.
- 5 Vehicles built before 0312004: Measure the voltage between the trailer control unit, connector C1030, pin 1, circuit (WH), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS

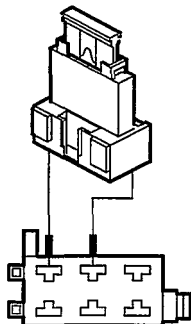


VFE63307

DETAILS/RESULTS/ACTIONS

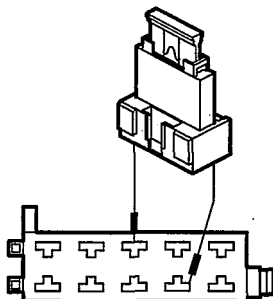
- 6 Vehicles built from 0312004: Measure the voltage between the trailer control unit, connector C1041, pin 5, circuit (WH), wiring harness side and ground.
- Does the meter display fluctuating battery voltage?
- **Yes**
GO to B6.
- **No**
LOCATE and RECTIFY the break in the circuit 49-LG12 (BU) or (WH) between generic electronic module (GEM) and the trailer control unit using the Wiring Diagrams. CHECK and RENEW generic electronic module (GEM) if necessary. CHECK the operation of the system.

B6: CHECK THE TRAILER CONTROL UNIT



VFE0033874

- ☐ Ignition switch in position 0.
- ☐ Vehicles built before 0312004: Connect a fused jumper wire (20 A) at the trailer control unit, connector C1030, between pin 1, circuit (WH) and pin 3, circuit (GY/WH), wiring harness side.
- ☐ Vehicles built from 0312004: Connect a fused jumper wire (20 A) at the trailer control unit, connector C1041, between pin 5, circuit (WH) and pin 8, circuit (GYNVH), wiring harness side.



VFE63308

- ☐ Ignition switch in position II.
- ☐ Switch on LEFT-HAND TURN SIGNAL.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>6 CHECK the left-hand rear turn signal lamp.</p> <ul style="list-style-type: none"> Is the left-hand rear turn signal lamp operational? <p>→ Yes RENEW the trailer control unit. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit (GY/WH) between the trailer control unit and rear lamp assembly using the wiring diagrams. CHECK the operation of the system.</p>
B7: CHECK FUSE	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Disconnect following components.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: Fuse F31 (20 A) (CJB) Vehicles built from 1012002 to 1012004: Fuse F56 (20 A) (CJB) Vehicles built from 1012004: Fuse F3 (20 A) (CJB) <p>3 CHECK fuse F31, F56 or F3 (20 A) (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK.? <p>→ Yes GO to B8.</p> <p>→ No RENEW fuse F31 (20 A), F56 (20 A) or F3 (20 A) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>
B8: CHECK VOLTAGE AT FUSE	
	<p>Connect Fuse.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: Fuse F31 (20 A) (CJB) Vehicles built from 1012002 to 1012004: Fuse F56 (20 A) (CJB) Vehicles built from 1012004: Fuse F3 (20 A) (CJB) <p>2 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between:
- Vehicles built before 1012002: Fuse F31 (20 A) (CJB) and ground.
 - Vehicles built from 1012002 to 1012004: Fuse F56 (20 A) (CJB) and ground.
 - Vehicles built from 1012004: Fuse F3 (20 A) (CJB) and ground.

• Does the meter display battery voltage?

→ **Yes**

GO to B9.

→ **No**

- Vehicles built before 1012002: RECTIFY the break in the voltage supply of fuse F31 (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system.

- Vehicles built from 1012002 to 1012004: RECTIFY the break in the voltage supply of fuse F56 (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system.

- Vehicles built from 1012004: RECTIFY the break in the voltage supply of fuse F3 (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system.

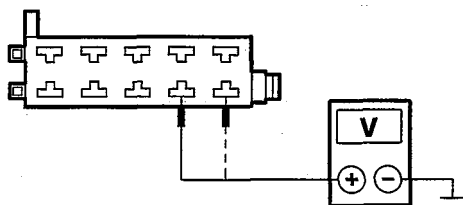
B9: CHECK THE VOLTAGE SUPPLY OF THE TRAILER CONTROL UNIT

☐ Ignition switch in position 0.

2 ☐ Disconnect trailer control unit from connector C1041.

☐ Ignition switch in position II.

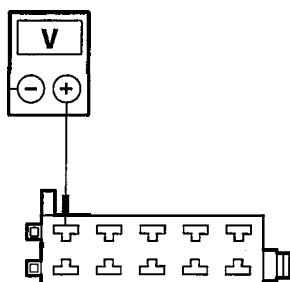
☐ Vehicles built before 0312004: Measure the voltage between the trailer control unit, connector C1041, pin 8, circuit (RD), wiring harness side and pin 10, circuit (RD), wiring harness side and ground.



VFE0033871

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE63309

DETAILS RESULTS ACTIONS

- 5 Vehicles built from 0312004: Measure the voltage between the trailer control unit, connector C1041, pin 1, circuit (RD), wiring harness side and ground.

• Is battery voltage measured in all cases?

→ **Yes**

GO to B10.

→ **No**

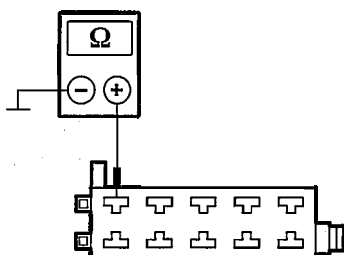
- Vehicles built before 1012002: LOCATE and RECTIFY the break in the circuit between fuse F31 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK the operation of the system.

- Vehicles built between 1012002 and 1012004: LOCATE and RECTIFY the break in the circuit between fuse F56 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK the operation of the system.

- Vehicles built from 1012004: LOCATE and RECTIFY the break in the circuit between fuse F3 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK the operation of the system.

B10: TEST THE GROUND CONNECTION OF THE TRAILER CONTROL UNIT

☐ Ignition switch in position 0.



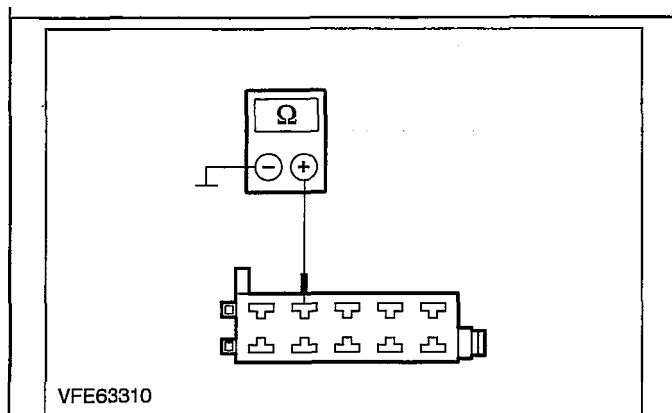
VFE0033872

- 2 Vehicles built before 0312004: Measure the resistance between the trailer control unit, connector C1041, pin 1, circuit (BN), wiring harness side and ground.

DIAGNOSIS AND TESTING

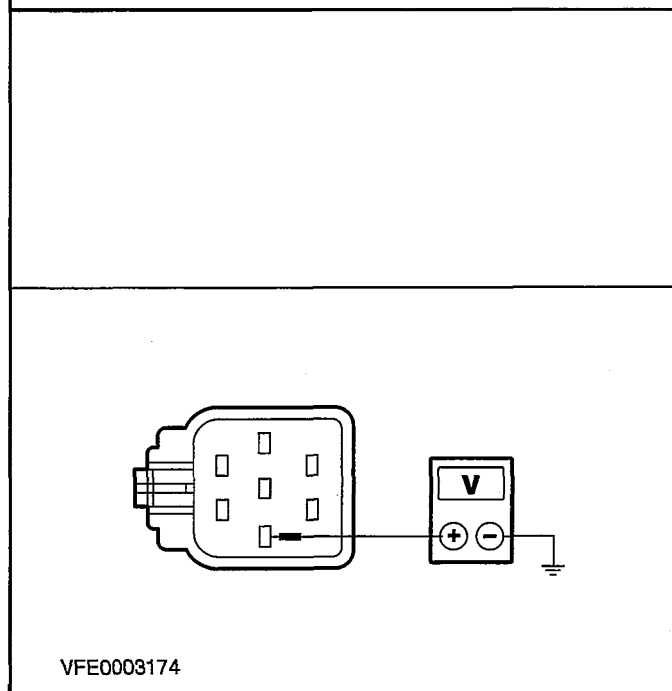
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



- ☐ Vehicles built from 0312004: Measure the resistance between the trailer control unit, connector C1041, pin 3, circuit (BN), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
- **Yes**
RENEW the trailer control unit. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit between the trailer control unit and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.

B11: CHECK THE LEFT-HAND FRONT TURN SIGNAL LAMP



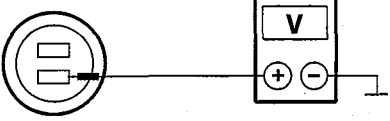
- 1 Ignition switch in position 0.
- ☐ Disconnect left-hand headlamp from connector C416.
- ☐ Ignition switch in position II.
- ☐ Switch on LEFT-HAND TURN SIGNAL.
- ☐ Measure the voltage between the left-hand headlamp, connector C416, pin 3, circuit 49-LG11 (BU/OG), wiring harness side and ground.
- Does the meter display fluctuating battery voltage?
- **Yes**
LOCATE and RECTIFY the break in circuit 31-LE31 (BK), between the headlamp and soldered connection S10 using the wiring diagrams. CHECK and INSTALL NEW headlamps if necessary. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the headlamp using the Wiring Diagrams. CHECK the operation of the system.

B12: CHECK THE VOLTAGE SUPPLY TO THE LEFT-HAND (SIDE) TURN SIGNAL LAMP



- 1 Ignition switch in position 0.
- ☐ Disconnect Left-hand (side) turn signal lamp from connector C337.
- ☐ Ignition switch in position II.
- 4 Switch on LEFT-HAND TURN SIGNAL.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSRESULTSIACTIONS
 <p>VFE0030173</p>	<p>5 Measure the voltage between the left-hand (side) turn signal lamp, connector C337, pin 1, circuit 49-LG13 (BU/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display fluctuating battery voltage? <p>→ Yes LOCATE and RECTIFY the break in circuit 31-LG13 (BK) between the (side) turn signal lamp and soldered connection S10 using the Wiring Diagrams. CHECK the turn signal lamp (side) and RENEW as necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the (side) turn signal lamp using the Wiring Diagrams. CHECK the turn signal lamp (side) and RENEW as necessary. CHECK the operation of the system.</p>
B13: CHECK GROUND CONNECTION OF RIGHT-HAND FRONT TURN SIGNAL LAMPS FOR OPEN CIRCUIT	
	1 Ignition switch in position 0.
	2 SWITCH ON the parking lamps.
	<p><input type="checkbox"/> CHECK right-hand front parking lamp.</p> <ul style="list-style-type: none"> Does the parking lamp illuminate? <p>→ Yes RENEW the generic electronic module (GEM). CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in circuit 31-DA4 (BK) between soldered connection S11 and ground connection G5 using the Wiring Diagrams. CHECK the operation of the system.</p>
B14: CHECK THE GROUND CONNECTION OF THE RIGHT-HAND REAR LAMP ASSEMBLY	
	1 Ignition switch in position 0.
	<input type="checkbox"/> SWITCH ON the parking lamps.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

3 CHECK rear parking lamp.

- Does the parking lamp illuminate?

→ **Yes**

GO to B15.

→ **No**

- Vehicles without trailer socket: LOCATE and RECTIFY the break in circuit 31-LF24 (BK), between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

- Vehicles with trailer socket built before 0312004: LOCATE and RECTIFY the break in circuit (BK) or 31-LF24 (BK) between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

- Vehicles with trailer socket built from 0312004: LOCATE and RECTIFY the break in circuit (BN) or 31-LF24 (BK) between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

B15: CHECK VOLTAGE SUPPLY TO RIGHT-HAND REAR LAMP ASSEMBLY

1 Ignition switch in position 0.

2 Disconnect Rear lamp assembly.

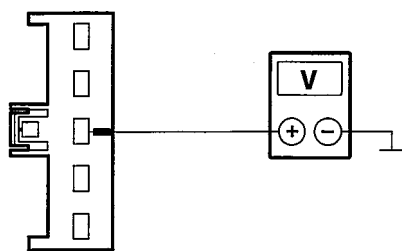
- Vehicles without trailer socket: from connector C348
- Vehicles with trailer socket: from connector C348a

3 Ignition switch in position II.

4 Switch on RIGHT-HAND TURN SIGNAL.

DIAGNOSIS AND TESTING

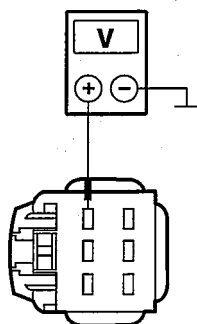
TEST CONDITIONS



VFE0033870

DETAILS/RESULTS/ACTIONS

- 5 Vehicles built before 0812005, measure voltage between right-hand rear lamp assembly:
- Vehicles without trailer socket: connector C348, pin 3, circuit 49-LG19 (BUIRD), wiring harness side and ground.
 - Vehicles with trailer socket: connector C348a, pin 3, circuit (GNNE), wiring harness side and ground.



VFE64390

- 6 Vehicles built from 0812005: Measure voltage between right-hand rear lamp assembly:
- Vehicles without trailer socket: connector C348, pin 1, circuit 49-LG19 (BUIRD), wiring harness side and ground.
 - Vehicles with trailer socket: connector C348a, pin 1, circuit (GNNE), wiring harness side and ground.

- Does the meter display fluctuating battery voltage?

→ Yes

CHECK and if necessary INSTALL A NEW rear lamp assembly. CHECK the operation of the system.

→ No

- Vehicles without trailer socket: LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the rear lamp assembly using the Wiring Diagrams. CHECK and RENEW generic electronic module (GEM) if necessary. CHECK the operation of the system.

- Vehicles with trailer socket: GO to B16.

B16: CHECK THE CONTROL CIRCUIT 49-LG19 (BUIRD) OR (GN/RD) AT THE TRAILER CONTROL UNIT FOR OPEN CIRCUIT

- 1 Ignition switch in position 0.

- 2 Disconnect Trailer control unit.

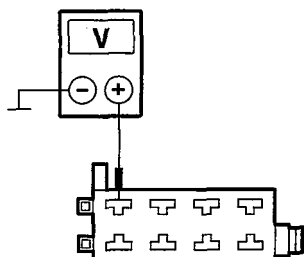
- Vehicles built before 0312004: from connector C1035
- Vehicles built from 0312004: from connector C1041

- 3 Ignition switch in position II.

- ☐ SWITCH ON the right-hand turn signal.

DIAGNOSIS AND TESTING

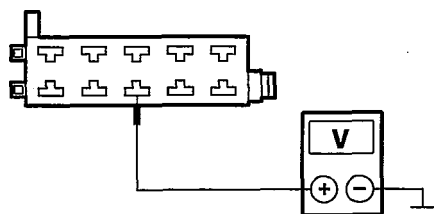
TEST CONDITIONS



VFE0033875

DETAILS/RESULTS/ACTIONS

Vehicles built before 0312004: Measure the voltage between the trailer control unit, connector C1035, pin 1, circuit (GNIRD), wiring harness side and ground.



VFE63311

6 Vehicles built from 0312004: Measure the voltage between the trailer control unit, connector C1041, pin 6, circuit (GNIRD), wiring harness side and ground.

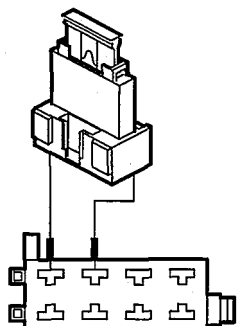
- Does the meter display fluctuating battery voltage?

→ **Yes**
GO to B17.

→ **No**
LOCATE and RECTIFY the break in circuit 49-LG19 (BU/RD) or (GNIRD) between the generic electronic module (GEM) and the trailer control unit using the Wiring Diagrams. CHECK and RENEW generic electronic module (GEM) if necessary. CHECK the operation of the system.

B17: CHECK THE TRAILER CONTROL UNIT

1 Ignition switch in position 0.

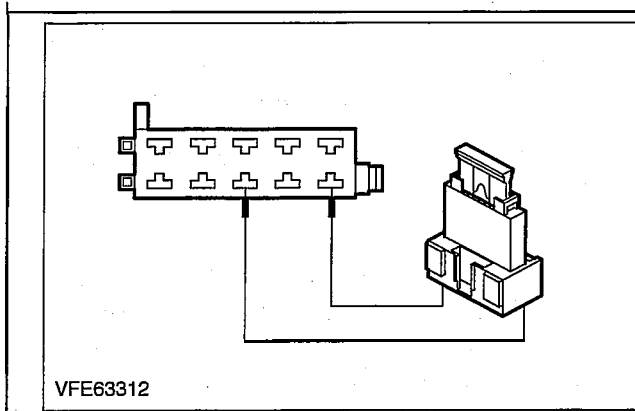


VFE0033876

2 Vehicles built before 0312004: Connect a fused jumper wire (20 A) at the trailer control unit, connector C1035, between pin 1, circuit (GNIRD) and pin 3, circuit (GNNE), wiring harness side.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS RESULTS ACTIONS

- ☐ Vehicles built from 03/12/2004: Connect a fused jumper wire (20 A) at the trailer control unit, connector C1041, between pin 6, circuit (GN/RD) and pin 10, circuit (GNNE), wiring harness side.

4 Ignition switch in position II.

☐ Switch on RIGHT-HAND TURN SIGNAL.

6 CHECK the operation of the right-hand rear turn signal lamp.

- Does the turn signal lamp work?

→ **Yes**

RENEW the trailer control unit. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit (GYNE) between the trailer control unit and rear lamp assembly using the wiring diagrams. CHECK the operation of the system.

B18: CHECK THE RIGHT-HAND FRONT TURN SIGNAL LAMP

1 Ignition switch in position 0.

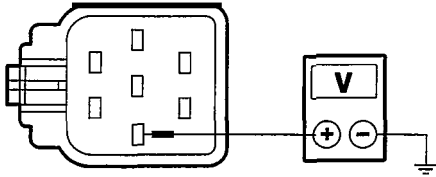
☐ Disconnect right-hand headlamp from connector C422.

☐ Ignition switch in position II.

4 Switch on RIGHT-HAND TURN SIGNAL.

DIAGNOSIS AND TESTING

TEST CONDITIONS

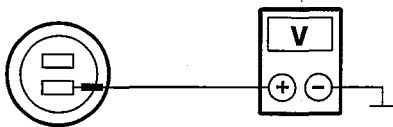


VFE0003174

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between the right-hand headlamp, connector C422, pin 3, circuit 49-LG18 (BU), wiring harness side and ground.
- Does the meter display fluctuating battery voltage?
- **Yes**
LOCATE and RECTIFY the break in circuit 31-LE30 (BK), between the headlamp and soldered connection S11 using the wiring diagrams. CHECK and INSTALL NEW headlamps if necessary. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the headlamp using the Wiring Diagrams. CHECK the operation of the system.

B19: CHECK VOLTAGE AT RIGHT-HAND (SIDE) TURN SIGNAL LAMP



VFE0030173

- 1 Ignition switch in position 0.
 - 2 Disconnect Right-hand (side) turn signal lamp from connector C352.
 - 3 Ignition switch in position II.
 - 4 Switch on RIGHT-HAND TURN SIGNAL.
 - 5 Measure the voltage between right-hand turn signal lamp (side), connector C352, pin 1, circuit 49-LG20 (BU/WH), wiring harness side and ground.
- Does the meter display fluctuating battery voltage?
- **Yes**
LOCATE and RECTIFY the break in circuit 31-LG20 (BK) between the turn signal lamp (side) and soldered connection S11 using the Wiring Diagrams. CHECK the turn signal lamp (side) and RENEW as necessary. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit between the generic electronic module (GEM) and the (side) turn signal lamp using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

PINPOINT TEST U : ONE OR MORE TURN SIGNAL LAMPS FLASH CONTINUOUSLY:

TEST CONDITIONS

DETAILS RESULTS ACTIONS

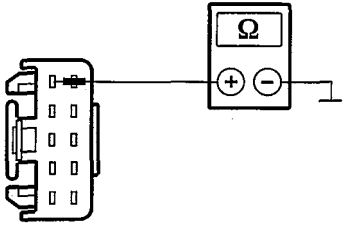
C1: DETERMINE THE FAULT CONDITION

	<div>1 Ignition switch in position II.</div> <div>CHECK the turn signal lamps.</div> <div> <ul style="list-style-type: none"> Does one or more turn signal lamp on the left-hand side flash continuously? </div> <div>→ Yes</div> <div> <ul style="list-style-type: none"> All left-hand turn signal lamps flash continuously: GO to C2. Left-hand (side) turn signal lamp and left-hand front turn signal lamp are flashing continuously: RENEW the generic electronic module (GEM). CHECK the operation of the system. Left-hand rear turn signal lamp flashes continuously: RENEW the generic electronic module (GEM). CHECK the operation of the system. </div> <div>→ No</div> <div> <ul style="list-style-type: none"> All right-hand turn signal lamps flash continuously: GO to C2. Right-hand (side) turn signal lamp and right-hand front turn signal lamp are flashing continuously: RENEW the generic electronic module (GEM). CHECK the operation of the system. Right-hand rear turn signal lamp flashes continuously: RENEW the generic electronic module (GEM). CHECK the operation of the system. </div>
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C2: EXCLUDE THE TURN SIGNAL SWITCH AS THE CAUSE OF THE FAULT

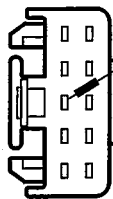
	<div>1 Ignition switch in position 0.</div> <div>2 Disconnect Turn signal switch from connector C357.</div> <div>Ignition switch in position II.</div>
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DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div> <input type="checkbox"/> CHECK the turn signal lamps. <ul style="list-style-type: none"> Do the turn signal lamps on one side flash continuously? <p>→ Yes</p> <ul style="list-style-type: none"> All left-hand turn signal lamps flash continuously: GO to C3. All right-hand turn signal lamps flash continuously: GO to C4. <p>→ No</p> <p>RENEW the turn signal switch. CHECK the operation of the system.</p> </div>
C3: CHECK CIRCUIT 31S-LG1 (BK/YE) FOR SHORT TO GROUND	
<div>  </div> <div>VFE0028669</div>	<div> <input type="checkbox"/> Ignition switch in position 0. <div> <input type="checkbox"/> 2 Disconnect Generic electronic module (GEM) from connector C320. </div> <div> <input type="checkbox"/> 3 Measure the resistance between the turn signal switch, connector C357, pin 1, circuit 31S-LG1 (BK/YE), wiring harness side and ground. <ul style="list-style-type: none"> Is a resistance of more than 10,000 ohms measured? <p>→ Yes</p> <p>RENEW the generic electronic module (GEM). CHECK the operation of the system.</p> <p>→ No</p> <p>LOCATE and RECTIFY the short to ground in the circuit between the generic electronic module (GEM) and the turn signal switch using the Wiring Diagrams. CHECK the operation of the system.</p> </div> </div>
C4: CHECK CIRCUIT 31S-LG2 (BK/BU) FOR SHORT TO GROUND	
	<div> <input type="checkbox"/> 1 Ignition switch in position 0. <div> <input type="checkbox"/> Disconnect Generic electronic module (GEM) from connector C320. </div> </div>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0025221

DETAILS/RESULTS/ACTIONS

3 Measure the resistance between the turn signal switch, connector C357, pin 3, circuit 31S-LG2 (BWBU), wiring harness side and ground.

- Is a resistance of more than 10,000 ohms measured?

→ **Yes**

CHECK and if necessary INSTALL A NEW generic electronic module (GEM). CHECK the operation of the system.

→ **No**

LOCATE AND RECTIFY the short to ground in the circuit between the turn signal switch and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST V : ONE/SEVERAL TURN SIGNAL LAMPS ILLUMINATE CONTINUOUSLY

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D1: DETERMINE THE FAULT CONDITION

1 Ignition switch in position II.

2 CHECK the turn signal lamps.

- Are all turn signal lamps continuously lit on one side?

→ **Yes**

RENEW the generic electronic module (GEM). CHECK the operation of the system.

→ **No**

GO to D2.

D2: ELIMINATE THE GEM (GENERIC ELECTRONIC MODULE) AS CAUSE OF THE SHORT TO BATTERY VOLTAGE

☐ Ignition switch in position 0.

2 Disconnect Fuse F24 (20 A).

3 Disconnect Fuse F25 (15 A).

4 Disconnect Fuse F27.

= Vehicles built before 03/2004: 10 A

= Vehicles built from 03/2004: 15 A

5 Disconnect Fuse F38 (7.5 A).

6 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- 7** CHECK all turn signal lamps.
- Is at least one turn signal lamp lit continuously?
- **Yes**
- Left-hand (side) turn signal lamp and left-hand front turn signal lamp are lit continuously: LOCATE and RECTIFY the short to battery voltage in circuits 49-LG13 (BU/RD) or 49-LG11 (BUIOG), between the generic electronic module (GEM) and the (side) turn signal lamp or the headlamp using the Wiring Diagrams. CHECK the operation of the system.
 - Left-hand rear turn signal lamp is lit continuously, vehicles without trailer socket: LOCATE and REPAIR the short to battery voltage in circuit 49-LG12 (BU), between the generic electronic module (GEM) and the rear lamp assembly, using the Wiring Diagrams. CHECK the operation of the system.
 - Left-hand rear turn signal lamp is lit continuously, vehicles with trailer socket: GO to D3.
 - Right-hand (side) turn signal lamp and right-hand front turn signal lamp are lit continuously: LOCATE and RECTIFY the short to battery voltage in circuits 49-LG18 (BU) or 49-LG20 (BU/WH), between the generic electronic module (GEM) and the (side) turn signal lamp or the headlamp using the Wiring Diagrams. CHECK the operation of the system.
 - Right-hand rear turn signal lamp is lit continuously, vehicles without trailer socket: LOCATE and REPAIR the short to battery voltage in circuit 49-LG19 (BUIRD), between the generic electronic module (GEM) and the rear lamp assembly, using the Wiring Diagrams. CHECK the operation of the system.
 - Right-hand rear turn signal lamp is lit continuously, vehicles with trailer socket: GO to D5.
- **No**
- RENEW the generic electronic module (GEM).
CHECK the operation of the system.

D3: CHECK CIRCUIT (GY/WH) FOR SHORT TO BATTERY VOLTAGE

- 1** Ignition switch in position 0.
- ☐ Connect Fuse F24 (20 A).
- ☐ Connect Fuse F25 (15 A).

DIAGNOSIS AND TESTING

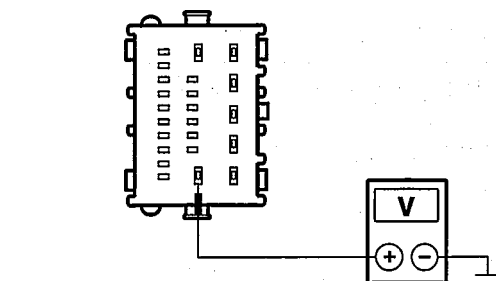
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- | |
|--|
| <p>4 Connect Fuse F27.</p> <ul style="list-style-type: none"> - Vehicles built before 0312004: 10 A - Vehicles built from 0312004: 15 A |
| <p><input type="checkbox"/> Connect Fuse F38 (7.5 A).</p> |
| <p>6 Disconnect Trailer control unit from.</p> <ul style="list-style-type: none"> - Vehicles built before 0312004: Connector C1030 - Vehicles built from 0312004: Connector C1041 |
| <p>7 Ignition switch in position II.</p> |
| <p>8 CHECK the left-hand rear turn signal lamp.</p> <ul style="list-style-type: none"> • Does the left-hand rear turn signal lamp illuminate continuously? <p>→ Yes
LOCATE and RECTIFY the short to battery voltage in circuit (GY/WH) between the trailer control unit and rear lamp assembly using the wiring diagrams. CHECK the operation of the system.</p> <p>→ No
GO to D4.</p> |

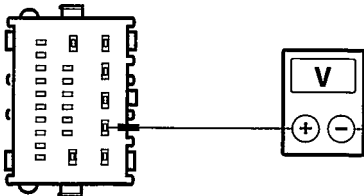
D4: EXCLUDE THE TRAILER CONTROL UNIT AS THE CAUSE OF THE FAULT

- | |
|--|
| <p>1 Ignition switch in position 0.</p> |
| <p>2 Disconnect Generic electronic module (GEM) from connector C316.</p> |
| <p>3 Vehicles built before 0812005: Measure the voltage between the generic electronic module (GEM), connector C316, pin 6, circuit 49-LG12 (BU), wiring harness side and ground.</p> |



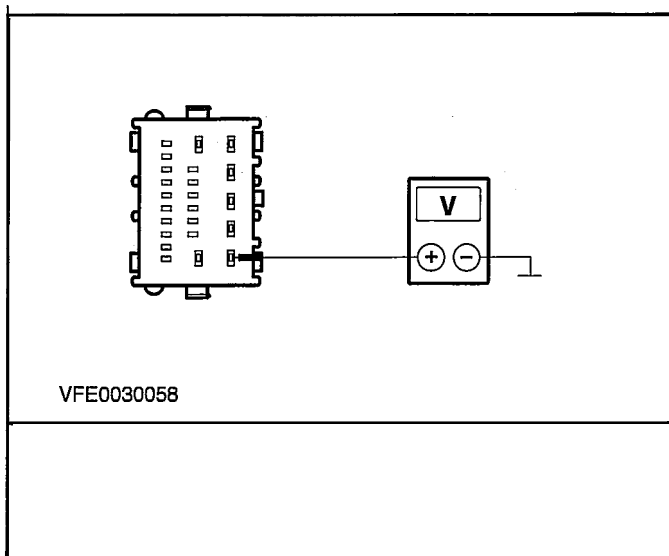
VFE63313

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0028502</p>	<p><input type="checkbox"/> Vehicles built from 0812005: Measure the voltage between the generic electronic module (GEM), connector C316, pin 2, circuit 49-LG12 (BU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in the circuit(s) between the generic electronic module (GEM) and the trailer control unit using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No RENEW the trailer control unit. CHECK the operation of the system.</p>
D5: CHECK CIRCUIT (GNNE) FOR SHORT TO BATTERY VOLTAGE	
	<p>1 Ignition switch in position 0.</p>
	<p><input type="checkbox"/> Connect Fuse F24 (20 A).</p>
	<p>3 Connect Fuse F25 (15 A).</p>
	<p>4 Connect Fuse F27.</p> <ul style="list-style-type: none"> Vehicles built before 0312004: 10 A Vehicles built from 0312004: 15 A
	<p>5 Connect Fuse F38 (7.5 A).</p>
	<p>6 Disconnect Trailer control unit from.</p> <ul style="list-style-type: none"> Vehicles built before 0312004: Connector C1035 Vehicles built from 0312004: Connector C1041
	<p>7 Ignition switch in position II.</p>
	<p><input type="checkbox"/> CHECK the right-hand rear turn signal lamp.</p> <ul style="list-style-type: none"> Does the right-hand rear turn signal illuminate continuously? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in circuit (GNNE) between the trailer control unit and rear lamp assembly using the wiring diagrams. CHECK the operation of the system.</p> <p>→ No GO to D6.</p>
D6: EXCLUDE THE TRAILER CONTROL UNIT AS THE CAUSE OF THE FAULT	
	<p>1 Ignition switch in position 0.</p>
	<p>Disconnect Generic electronic module (GEM) from connector C316.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

3 Measure the voltage between the generic electronic module (GEM), connector C316, pin 1, circuit 49-LG19 (BU/RD), wiring harness side and ground.

• Is battery voltage measured?

→ **Yes**

LOCATE and RECTIFY the short to battery voltage in the circuit(s) between the generic electronic module (GEM) and the trailer control unit using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

RENEW the trailer control unit. CHECK the operation of the system.

PINPOINT TEST W : THE HAZARD WARNING SYSTEM IS NOT WORKING PROPERLY.

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

E1: DETERMINE THE FAULT CONDITION

1 Ignition switch in position II.

2 SWITCH ON the hazard warning lights.

3 CHECK the turn signal lamps.

• Are all turn signal lamps illuminated continuously?

→ **Yes**

RENEW the generic electronic module (GEM). CHECK the operation of the system.

→ **No**

- All turn signal lamps are flashing: GO to E2.
- Turn signal lamps do not flash: GO to E5.

E2: DETERMINE THE FAULT CONDITION

1 Ignition switch in position II.

2 Switch off the HAZARD WARNING LIGHTS.

3 CHECK the turn signal lamps.

• Do all turn signal lamps illuminate continuously?

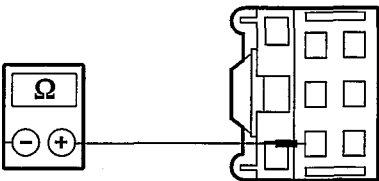
→ **Yes**

RENEW the generic electronic module (GEM). CHECK the operation of the system.

→ **No**

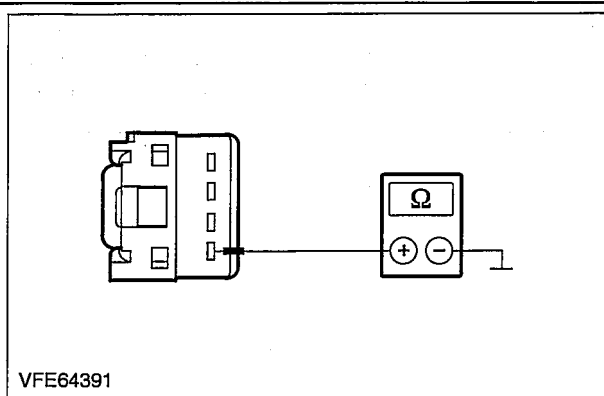
All turn signal lamps are flashing: GO to E3.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E3: EXCLUDE THE HAZARD WARNING SWITCH AS THE CAUSE OF THE FAULT	
	<input checked="" type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> Disconnect Hazard warning lamp switch. <ul style="list-style-type: none"> - Vehicles built before 0812005: from connector C321 - Vehicles built from 0812005: from connector C341
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> CHECK the turn signal lamps. <ul style="list-style-type: none"> • Do the turn signal lamps flash? <ul style="list-style-type: none"> → Yes GO to E4. → No RENEW the hazard warning lamp switch. CHECK the operation of the system.
E4: CHECK CIRCUIT 31S-LG8 (BK/OG) FOR SHORT TO GROUND	
	<input type="checkbox"/> Ignition switch in position 0.
	<input checked="" type="checkbox"/> 2 Disconnect Generic electronic module (GEM) from connector C320.
 <p>VFE0028668</p>	<input type="checkbox"/> Vehicles built before 0812005: Measure the resistance between the hazard warning lamp switch, connector C321, pin 3, circuit 31S-LG8 (BWO), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 4** Vehicles built from 0812005: Measure the resistance between the hazard warning lamp switch, connector C341, pin 4, circuit 31S-LG8 (BWOOG), wiring harness side and ground.
- Is a resistance of more than 10,000 ohms measured?
- **Yes**
RENEW the generic electronic module (GEM).
CHECK the operation of the system.
- **No**
LOCATE AND RECTIFY the short to ground in the circuit between the hazard warning lamp switch and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.

E5: NARROW DOWN THE FAULT CONDITION

- 1** CHECK the left-hand turn signal lamps.
- ☐ Switch on LEFT-HAND TURN SIGNAL.
- 3** CHECK the right-hand turn signal lamps.
- 4** SWITCH ON the right-hand turn signal.
- Do the left and right-hand turn signal lamps work correctly?
- **Yes**
GO to E6.
- **No**
RENEW the generic electronic module (GEM).
CHECK the operation of the system.

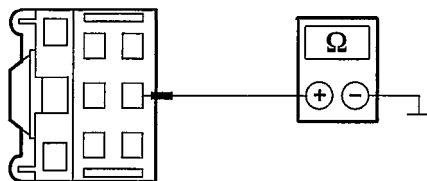
E6: CHECK THE GROUND CONNECTION OF THE HAZARD WARNING LAMP SWITCH FOR OPEN CIRCUIT

- 1** Ignition switch in position 0.
- ☐ Disconnect Hazard warning lamp switch.
- Vehicles built before 0812005: from connector C321
 - Vehicles built from 0812005: from connector C341

DIAGNOSIS AND TESTING

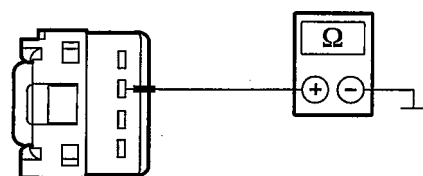
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



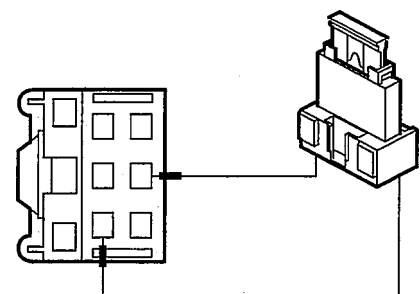
VFE0028665

- ☐ Vehicles built before 0812005: Measure the resistance between the hazard warning lamp switch, connector C321, pin 5, circuit 31-LG8 (BK), wiring harness side and ground.



VFE64392

- 4** Vehicles built from 0812005: Measure the resistance between the hazard warning lamp switch, connector C341, pin 2, circuit 31-LG8 (BK), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
 - **Yes**
GO to E7.
 - **No**
LOCATE and RECTIFY the break in the circuit between the hazard warning lamp switch and soldered connection S265 using the Wiring Diagrams. CHECK the operation of the system.

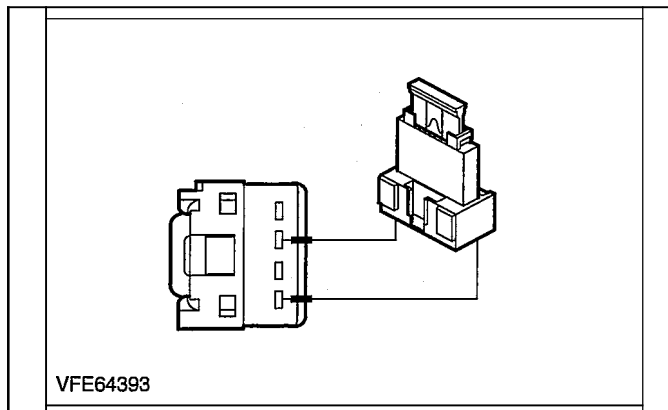
E7: EXCLUDE THE HAZARD WARNING LAMP SWITCH AS THE CAUSE OF THE FAULT

VFE0028667

- 1** Vehicles built before 0812005: Connect a fused jumper wire (7.5 A) at the hazard warning lamp switch, connector C321, between pin 3, circuit 31S-LG8 (BWOOG) and pin 5, circuit 31-LG8 (BK), wiring harness side.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- ☐ Vehicles built from 0812005: Connect a fused jumper wire (7.5 A) at the hazard warning lamp switch, connector C341, between pin 4, circuit 31S-LG8 (BWOOG) and pin 2, circuit 31-LG8 (BK), wiring harness side.

3 Ignition switch in position II.

4 CHECK the turn signal lamps.

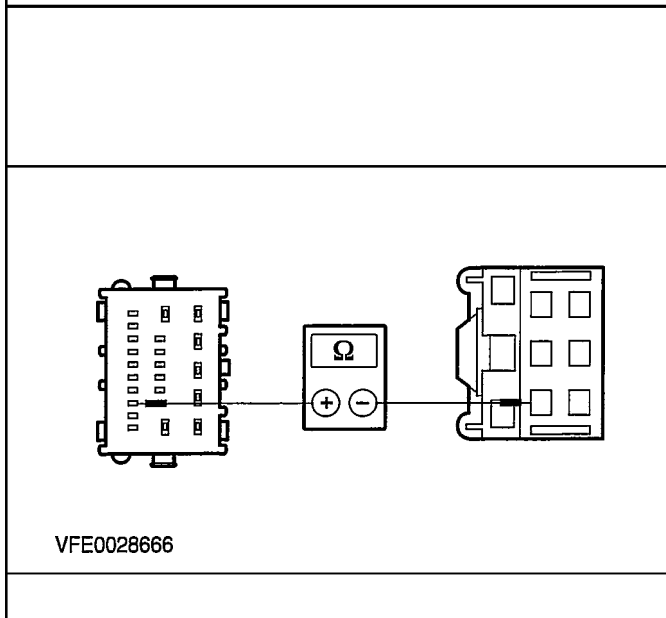
- Do the turn signal lamps work?

→ **Yes**

RENEW the hazard warning lamp switch.
CHECK the operation of the system.

→ **No**

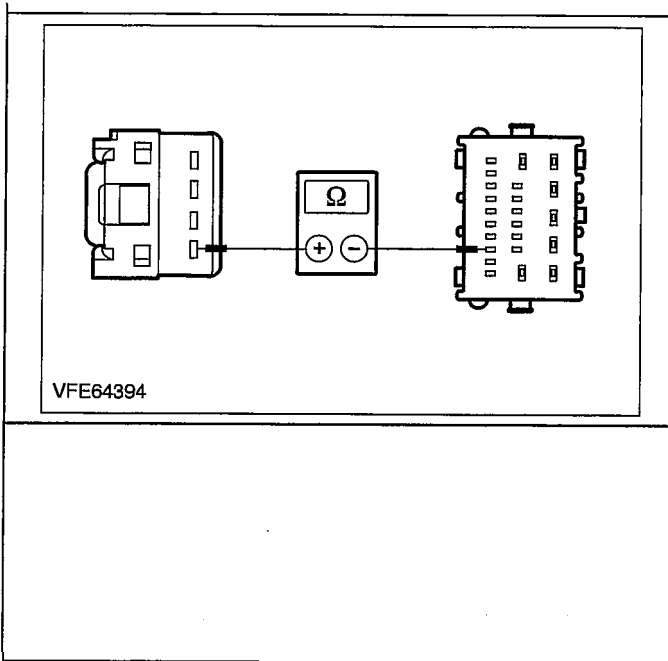
GO to E8.

E8: CHECK CONTROL CIRCUIT 31S-LG8 (BKIOG) FOR OPEN CIRCUIT

1 Ignition switch in position 0.

- ☐ Disconnect Generic electronic module (GEM) from connector C320.

3 Vehicles built before 0812005: Measure the resistance between the hazard warning lamp switch, connector C321, pin 3, circuit 31S-LG8 (BWOOG), wiring harness side and the generic electronic module (GEM), connector C320, pin 16, circuit 31S-LG8 (BWOOG), wiring harness side.

DIAGNOSIS AND TESTING**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS**

4 Vehicles built from 08/12/2005: Measure the resistance between the hazard warning lamp switch, connector C341, pin 4, circuit 31S-LG8 (BWO), wiring harness side and the generic electronic module (GEM), connector C320, pin 16, circuit 31S-LG8 (BWO), wiring harness side.

- Is a resistance of less than 2 ohms registered?

→ **Yes**

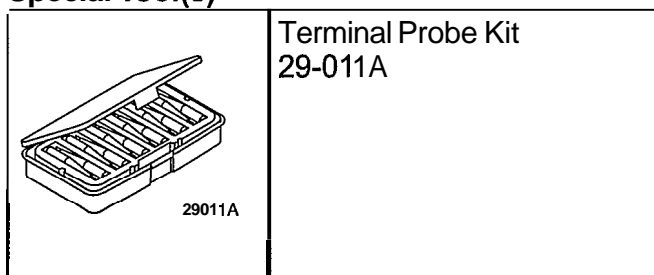
RENEW the generic electronic module (GEM).
CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the hazard warning lamp switch and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING**Parking, Rear and License Plate Lamps**

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)

Terminal Probe Kit
29-011A

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection Chart

Electrical
<ul style="list-style-type: none"> • Fuse(s) • Lamp(s) • Connector(s) • Switches • Wiring loom

Inspection and Checking

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections which were separated in the vehicle, so that communication between the module and WDS is ensured.

NOTE: If the generic electronic module (GEM) is changed, the new one must be configured. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module. REFER to:

Module Configuration (418-01, Diagnosis and Testing),
Generic Electronic Module (GEM) - Vehicles Built Up To: 10/2005 (419-10, Diagnosis and Testing),
Generic Electronic Module (GEM) - Vehicles Built From: 10/2005 (419-10, Diagnosis and Testing).

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.
4. If the concern is not visually evident, refer to the Symptom Chart.

Symptom Chart**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> • Parking lamps, rear lamps and license lamps are inoperative 	<ul style="list-style-type: none"> • Fuse(s) • Circuit(s) • Headlight switch • Central junction box (CJB) • Rain sensor • Generic Electronic Module (GEM) • Gasket for license plate lamp 	<ul style="list-style-type: none"> • GO to Pinpoint Test A.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> One or more parking lamps, rear lamps or license plate lamps are inoperative 	<ul style="list-style-type: none"> Fuse(s) Circuit(s) Left/right-hand headlamp Left/right-hand rear lamp assembly Left/right-hand license plate lamp Central junction box (CJB) Generic Electronic Module (GEM) Rain sensor Gasket for license plate lamp 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
<ul style="list-style-type: none"> Parking lamps, rear lamps and license plate lamps lit continuously. 	<ul style="list-style-type: none"> Circuit(s) Headlight switch Generic Electronic Module (GEM) Central junction box (CJB) 	<ul style="list-style-type: none"> GO to Pinpoint Test C.

System Checks

NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST X : PARKING LAMPS, REAR LAMPS AND LICENSE LAMPS ARE INOPERATIVE

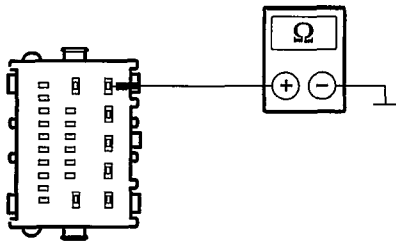
TEST CONDITIONS**DETAILS/RESULTS/ACTIONS****A1: DETERMINE THE FAULT CONDITION**

	<p>1 A failure of the license plate lamps is not necessarily caused by an electrical defect. Due to a high level of heat emitted from the bulb in the – license plate lamp, the gasket for the – license plate lamp may become deformed or melt. If there is a problem, a comprehensive visual inspection of the license plate lamp or the tailgate handle should first be performed, looking in particular for any traces of corrosion caused by the penetration of water.</p> <ul style="list-style-type: none"> Can traces of corrosion be seen in the area of the license plate lamps? <p>→ Yes Install modified gaskets for the license plate lamps. Check the operation of the system.</p> <p>→ No GO to A2.</p>
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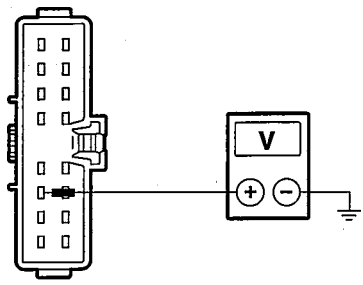
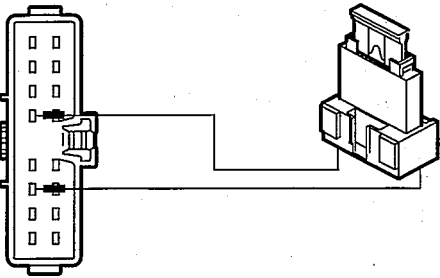
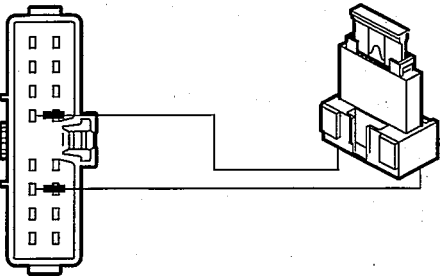
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A2: DETERMINE VEHICLE EQUIPMENT LEVEL	
	1 Determine vehicle equipment level. <ul style="list-style-type: none"> Does the vehicle have automatic headlights? → Yes GO to A3. → No GO to A5.
A3: DETERMINE THE FAULT CONDITION	
NOTE: Cover rain sensor with a light-proof material to simulate darkness.	
	1 Ignition switch in position II. 2 CHECK the parking lights after each test step. 3 SWITCH ON dipped beam. 4 SWITCH OFF the dipped beam. 5 SWITCH ON automatic headlights at the headlamp switch. <ul style="list-style-type: none"> Are the parking lamps only inoperative when the switch is in the automatic headlights position? → Yes GO to A4. → No GO to A5.
A4: CHECK THE VOLTAGE SUPPLY TO THE PARKING LAMPS (AUTOMATIC HEADLIGHTS) FOR OPEN CIRCUIT	
	1 Ignition switch in position 0. 2 Disconnect Generic electronic module (GEM) from connector C316. 3 Headlamp switch in OFF POSITION.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0030060</p>	<p>4 Measure the resistance between the generic electronic module (GEM), connector C316, pin 5, circuit 29S-LF25 (OG/GN), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 10,000 ohms registered? <p>→ Yes REFER to: Headlamps (417-01, Diagnosis and Testing).</p> <p>→ No LOCATE and RECTIFY the break in the circuit between soldered connection S16 and the generic electronic module (GEM) using the Wiring Diagrams. CHECK the operation of the system.</p>
A5: CHECK FUSE F17 (15 A) (CJB).	
	<p>Ignition switch in position 0.</p> <p>2 Disconnect fuse F17 (15 A) (CJB).</p> <p>CHECK fuse F17 (15 A) (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to A6.</p> <p>→ No RENEW fuse F17 (15 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>
A6: CHECK THE VOLTAGE AT FUSE F17 (15 A) (CJB)	
	<p><input type="checkbox"/> Connect fuse F17 (15 A) (CJB).</p> <p>2 Ignition switch in position II.</p> <p>3 Measure the voltage between fuse F17 (15 A) (CJB) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A7.</p> <p>→ No LOCATE and RECTIFY the break in the voltage supply to fuse F17 (15 A) (CJB) using the Wiring Diagrams, if necessary CHECK and RENEW the CJB. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A7: CHECK VOLTAGE AT HEADLIGHT SWITCH	
 <p>VFE0010045</p>	<input type="checkbox"/> Ignition switch in position 0.
	<input type="checkbox"/> Disconnect headlight switch from connector C338.
	<input type="checkbox"/> Ignition switch in position II.
 <p>VFE0016144</p>	<p>Measure the voltage between the headlight switch, connector C338, pin 11, circuit 29-LE29 (OGIBK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A8.</p> <p>→ No LOCATE and RECTIFY the break in the circuit(s) between fuse F17 (15 A) (CJB) and the headlamp switch using the Wiring Diagrams. CHECK the operation of the system.</p>
	A8: CHECK HEADLIGHT SWITCH
 <p>VFE0016144</p>	<input type="checkbox"/> Ignition switch in position 0.
	<input type="checkbox"/> Connect a fused jumper wire (15 A) at the headlamp switch, connector C338, between pin 11, circuit 29-LE29 (OGIBK) and pin 13, circuit 29S-DB8 (OGIBU), wiring harness side.
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> CHECK the parking lamps.
	<ul style="list-style-type: none"> Do the parking lamps illuminate? <p>→ Yes INSTALL A NEW headlight switch. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in circuit 29S-DB8 (OGIBU), between headlight switch and CJB (bridge) using the wiring diagrams, and if necessary INSTALL A NEW CJB. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

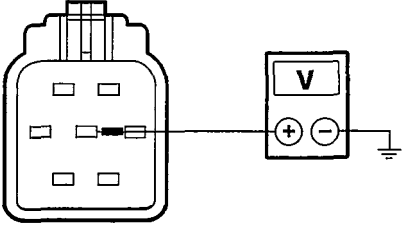
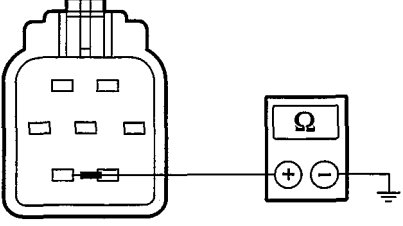
PINPOINT TEST Y : ONE OR MORE PARKING LAMPS, REAR LAMPS OR LICENSE PLATE LAMPS ARE INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: DETERMINE THE FAULT CONDITION	
	<p>1 A failure of the license plate lamps is not necessarily caused by an electrical defect. Due to a high level of heat emitted from the bulb in the – license plate lamp, the gasket for the – license plate lamp may become deformed or melt. If there is a problem, a comprehensive visual inspection of the license plate lamp or the tailgate handle should first be performed, looking in particular for any traces of corrosion caused by the penetration of water.</p> <ul style="list-style-type: none"> • Can traces of corrosion be seen in the area of the license plate lamp? <p>→ Yes Install modified gaskets for the license plate lamps. Check the operation of the system.</p> <p>→ No GO to B2.</p>
B2: DETERMINE THE FAULT CONDITION	
	<p>1 SWITCH ON the side lights.</p> <p>2 DETERMINE the fault conditions.</p> <ul style="list-style-type: none"> • Is one left-hand parking lamp and/or the license plate lamp(s) inoperative? <p>→ Yes</p> <ul style="list-style-type: none"> - Front left-hand parking lamp (all other lamps OK): GO to B5. - Front left-hand parking lamp and left-hand rear lamp: GO to B3. - Left-hand rear lamp (all other lamps OK): GO to B11. - Licence plate lamp(s) (all other lamps OK): GO to B17. <p>→ No</p> <ul style="list-style-type: none"> - Front right-hand parking lamp (all other lamps OK): GO to B8. - Front right-hand parking lamp and rear right-hand lamp: GO to B4. - Right-hand rear lamp (all other lamps OK): GO to B14.
B3: CHECK FUSE F22 (7.5 A) (CJB).	
	<p>Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect fuse F22 (7.5 A) (CJB).</p>

DIAGNOSIS AND TESTING

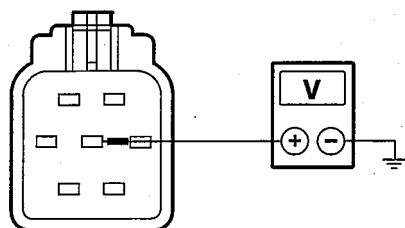
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div>3</div> CHECK fuse F22 (7.5 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes CHECK and if necessary RENEW the CJB. CHECK the operation of the system. → No RENEW fuse F22 (7.5 A) (CJB). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
B4: CHECK FUSE F23 (7.5 A) (CJB).	
	<div>1</div> Ignition switch in position 0.
	<div>2</div> Disconnect fuse F23 (7.5 A) (CJB).
	<div>3</div> CHECK fuse F23 (7.5 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes CHECK and if necessary RENEW the CJB. CHECK the operation of the system. → No RENEW fuse F23 (7.5 A) (CJB). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
B5: CHECK LEFT-HAND HEADLAMP	
	<div>1</div> Ignition switch in position II.
	<div>2</div> SWITCH ON the left-hand turn signal.
	<div>3</div> CHECK left-hand turn signal lamp <ul style="list-style-type: none"> Does left-hand turn signal operate? → Yes GO to B6. → No GO to B7.
B6: CHECK VOLTAGE AT THE FRONT LEFT-HAND PARKING LAMP	
	<div>1</div> Ignition switch in position 0.
	<div>2</div> Disconnect left-hand headlamp from connector C416.
	<div>3</div> SWITCH ON the side lights.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>E0011567</p>	<p>4 Measure the voltage at left-hand headlamp, connector C416, between pin 4, circuit 29S-LF7 (OG/BU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes CHECK and if necessary RENEW the headlamp. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F22 (7.5 A) (CJB) and the left-hand headlamp using the Wiring Diagrams. CHECK the operation of the system.</p>
B7: CHECK GROUND CONNECTION AT LEFT-HAND HEADLAMP	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect left-hand headlamp from connector C416.</p>
 <p>E0011568</p>	<p>3 Measure the resistance between the left-hand headlamp, connector C416, pin 6, circuit 31-LE31 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes CHECK and if necessary RENEW the headlamp. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the left-hand headlamp and soldered connection S10 using the wiring diagrams. CHECK the operation of the system.</p>
B8: CHECK THE RIGHT-HAND HEADLAMP	
	<p>1 Ignition switch in position II.</p> <p>2 SWITCH ON the right-hand turn signal.</p> <p>3 CHECK right-hand turn signal lamp.</p> <ul style="list-style-type: none"> Does right-hand turn signal work? <p>→ Yes GO to B9.</p> <p>→ No GO to B10.</p>
B9: CHECK VOLTAGE AT THE FRONT RIGHT-HAND PARKING LAMP	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect right-hand headlamp from connector C422.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



E0011567

DETAILS/RESULTS/ACTIONS

3 SWITCH ON the side lights.

4 Test voltage between right-hand headlamp connector C422, pin 4, circuit 29S-LF16 (OG/GN), wiring harness side and ground.

- Does the meter display battery voltage?

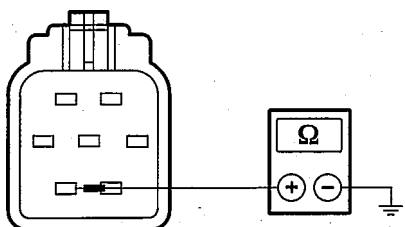
→ **Yes**

CHECK and if necessary RENEW the headlamp. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between fuse F23 (7.5 A) (CJB) and the right-hand headlamp using the Wiring Diagrams. CHECK the operation of the system.

B10: CHECK GROUND CONNECTION AT THE RIGHT-HAND HEADLAMP



E0011568

1 Ignition switch in position 0.

2 Disconnect right-hand headlamp from connector C422.

Measure the resistance between the right-hand headlamp, connector C422, pin 6, circuit 31-LE30 (BK), wiring harness side and ground.

- Is a resistance of less than 2 ohms registered?

→ **Yes**

CHECK and if necessary RENEW the headlamp. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the right-hand headlamp and soldered connection S11 using the wiring diagrams. CHECK the operation of the system.

B11: CHECK THE LEFT-HAND REAR LAMP ASSEMBLY

1 Ignition switch in position II.

2 SWITCH ON the left-hand turn signal.

3 Check left-hand rear turn signal lamp.

- Is the left-hand rear turn signal operative?

→ **Yes**

GO to B12.

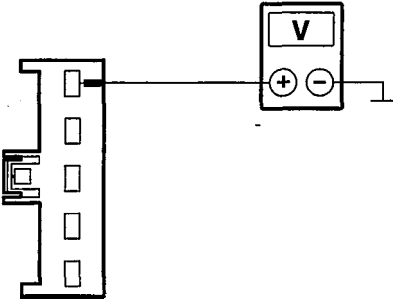
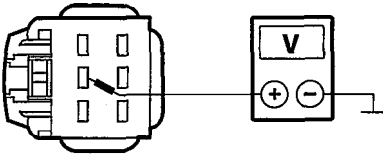
→ **No**

GO to B13.

B12: CHECK THE VOLTAGE AT THE LEFT-HAND REAR LAMP ASSEMBLY

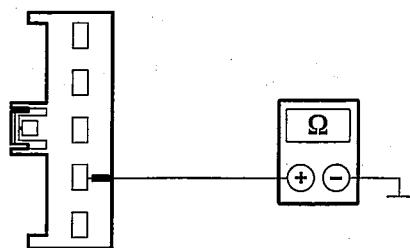
1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

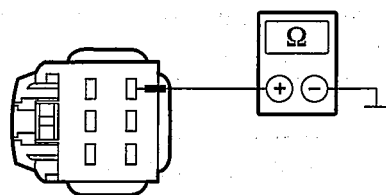
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> Disconnect Left-hand rear lamp assembly. <ul style="list-style-type: none"> - Vehicles without trailer socket: from connector C333 - Vehicles with trailer socket: from connector C333a
 <p>VFE0033877</p>	<input type="checkbox"/> SWITCH ON the side lights. <input type="checkbox"/> Measure the voltage at the left-hand rear lamp assembly, vehicles built before 0812005: <ul style="list-style-type: none"> - Vehicles without trailer socket, built before 0812005: connector C333, between pin 1, circuit 29S-LF11 (OG/WH), wiring harness side and ground. - Vehicles with trailer socket, built before 0312004: connector C333a, between pin 1, circuit (GY/BK), wiring harness side and ground. - Vehicles with trailer socket, built from 0312004 to 0812005: connector C333a, between pin 1, circuit (OGANH), wiring harness side and ground.
 <p>VFE64388</p>	<p>5 Measure the voltage at the left-hand rear lamp assembly, vehicles built from 0812005:</p> <ul style="list-style-type: none"> - Vehicles without trailer socket: connector C333, between pin 2, circuit 29S-LF11 (OGANH), wiring harness side and ground. - Vehicles with trailer socket: connector C333a, between pin 2, circuit (OG/WH), wiring harness side and ground. <p>• Does the meter display battery voltage?</p> <p>→ Yes CHECK and if necessary RENEW the rear lamp assembly. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between fuse F22 (7.5 A) (CJB) and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.</p>
B13: CHECK THE GROUND CONNECTION OF THE LEFT-HAND REAR LAMP ASSEMBLY	
	<input type="checkbox"/> Ignition switch in position 0. <p>2 Disconnect Left-hand rear lamp assembly.</p> <ul style="list-style-type: none"> - Vehicles without trailer socket: from connector C333 - Vehicles with trailer socket: from connector C333a

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0033869



VFE64389

DETAILS/RESULTS/ACTIONS

3 Measure the resistance between the left-hand rear lamp assembly, vehicles built before 0812005:

- Vehicles without trailer socket: Connector C333, pin 4, circuit 31-LF23 (BK), wiring harness side and ground.
- Vehicles with 13-pin trailer socket, built from 0312004: Connector C333a, pin 4, circuit (BN), wiring harness side and ground.
- All other vehicles with trailer socket: connector C333a, pin 4, circuit (GN), wiring harness side and ground.

4 Measure the resistance between the left-hand rear lamp assembly, vehicles built from 0812005:

- Vehicles without trailer socket: Connector C333, pin 4, circuit 31-LF23 (BK), wiring harness side and ground.
- Vehicles with 13-pin trailer socket: Connector C333a, pin 4, circuit (BN), wiring harness side and ground.
- All other vehicles with trailer socket: connector C333a, pin 4, circuit (GN), wiring harness side and ground.

• Is a resistance of less than 2 ohms registered?

→ **Yes**

CHECK and if necessary RENEW the rear lamp assembly. CHECK the operation of the system.

→ **No**

- Vehicles without trailer socket: LOCATE and RECTIFY the break in circuit 31-LF23 (BK) between the rear lamp assembly and soldered connection S24 using the Wiring Diagrams. CHECK the operation of the system.

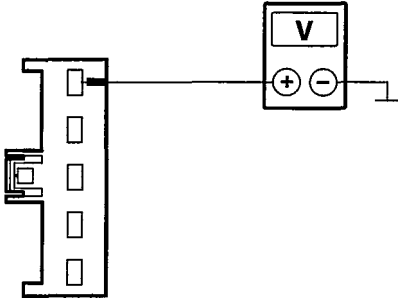
- Vehicles with 13-pin trailer socket, built from 0312004: LOCATE and RECTIFY the break in the circuit (BN) between the rear lamp assembly and soldered connection S1008 using the Wiring Diagrams. CHECK the operation of the system.

- All other vehicles with trailer socket: LOCATE and RECTIFY the break in circuit(s) (GN) or 31-LF23 (BK) between the rear lamp assembly and soldered connection S24 using the Wiring Diagrams. CHECK the operation of the system.

B14: CHECK THE RIGHT-HAND REAR LAMP ASSEMBLY

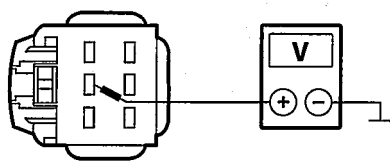
1 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>2 SWITCH ON the right-hand turn signal.</p> <p>3 CHECK right-hand turn signal lamp.</p> <ul style="list-style-type: none"> Does right-hand turn signal work? <p>→ Yes GO to B15.</p> <p>→ No GO to B16.</p>
B15: CHECK THE VOLTAGE AT THE RIGHT-HAND REAR LAMP ASSEMBLY	
	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect Right-hand rear lamp assembly.</p> <ul style="list-style-type: none"> Vehicles without trailer socket: from connector C348 Vehicles with trailer socket: from connector C348a <p>3 SWITCH ON the side lights.</p>
 <p>VFE0033877</p>	<p>4 Measure the voltage at the right-hand rear lamp assembly, vehicles built before 0812005:</p> <ul style="list-style-type: none"> Vehicles without trailer socket: connector C348, between pin 1, circuit 29S-LF20 (OG), wiring harness side and ground. Vehicles with trailer socket, built before 0312004: connector C348a, between pin 1, circuit (GY/RD), wiring harness side and ground. Vehicles with trailer socket, built from 0312004 to 0812005: connector C348a, between pin 1, circuit (OG), wiring harness side and ground.

DIAGNOSIS AND TESTING

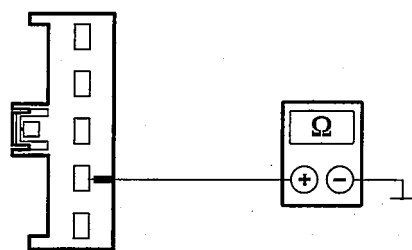
TEST CONDITIONS



VFE64388

DETAILS/RESULTS/ACTIONS

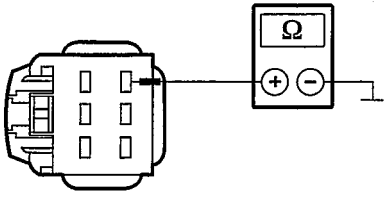
- 5** Measure the voltage at the right-hand rear lamp assembly, vehicles built from 0812005:
- Vehicles without trailer socket: connector C348, between pin 2, circuit 29S-LF20 (OG), wiring harness side and ground.
 - Vehicles with trailer socket: connector C348a, between pin 2, circuit (OG), wiring harness side and ground.
- Does the meter display battery voltage?
- **Yes**
CHECK and if necessary RENEW the rear lamp assembly. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit(s) between fuse F23 (7.5 A) (CJB) and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.

B16: CHECK THE GROUND CONNECTION OF THE RIGHT-HAND REAR LAMP ASSEMBLY

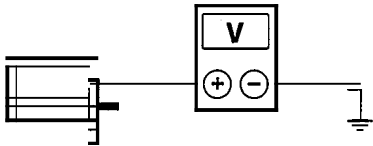
VFE0033869

- 1** Ignition switch in position 0.
- 2** Disconnect Right-hand rear lamp assembly.
- Vehicles without trailer socket: from connector C348
 - Vehicles with trailer socket: from connector C348a
- 3** Measure the resistance between the right-hand rear lamp assembly, vehicles built before 0812005:
- Vehicles without trailer socket: Connector C348, between pin 4, circuit 31-LF24 (BK), wiring harness side and ground.
 - Vehicles with trailer socket, built before 0312004: connector C348a, between pin 4, circuit (BK), wiring harness side and ground.
 - Vehicles with trailer socket built from 0312004: connector C348a, between pin 4, circuit (BN), wiring harness side and ground.

DIAGNOSIS AND TESTING

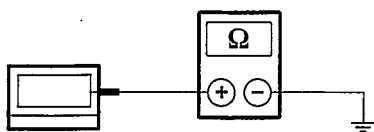
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE64389</p>	<p>4 Measure the resistance between the right-hand rear lamp assembly, vehicles built from 0812005:</p> <ul style="list-style-type: none"> - Vehicles without trailer socket: Connector C348, between pin 4, circuit 31-LF24 (BK), wiring harness side and ground. - Vehicles with trailer socket: connector C348a, between pin 4, circuit (BN), wiring harness side and ground. <p>• Is a resistance of less than 2 ohms registered?</p> <p>→ Yes CHECK and if necessary RENEW the rear lamp assembly. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit(s) between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.</p>
B17: DETERMINE THE FAULT CONDITION	
	<p>1 Ignition switch in position II.</p> <p><input type="checkbox"/> SWITCH ON the side lights.</p> <ul style="list-style-type: none"> • Are both license plate lamps inoperative? <p>→ Yes GO to B18.</p> <p>→ No</p> <ul style="list-style-type: none"> - Left-hand license plate lamp is inoperative: GO to B21. - Right-hand license plate lamp is inoperative: GO to B22.
B18: CHECK FUSE F33 (7.5 A) (CJB).	
	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect fuse F33 (7.5 A) (CJB).</p> <p>3 CHECK Fuse F33 (7.5 A) (CJB).</p> <ul style="list-style-type: none"> • Is the fuse OK? <p>→ Yes GO to B19.</p> <p>→ No RENEW fuse F33 (7.5 A) (CJB). If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS RESULTS ACTIONS
B19: CHECK THE VOLTAGE AT FUSE F33 (7.5 A) (CJB)	
	<input checked="" type="checkbox"/> 1 Connect fuse F33 (7.5 A) (CJB).
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> SWITCH ON the side lights.
	<input type="checkbox"/> Measure the voltage between fuse F33 (7.5 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to B20. → No LOCATE and RECTIFY the break in the voltage supply to fuse F33 (7.5 A) (CJB) using the Wiring Diagrams, if necessary CHECK and RENEW the CJB. CHECK the operation of the system.
B20: TEST THE VOLTAGE SUPPLY OF THE LICENSE PLATE LAMPS	
	<input type="checkbox"/> Ignition switch in position 0.
	<input checked="" type="checkbox"/> 2 Disconnect right-hand license plate lamp from connector C760.
	<input checked="" type="checkbox"/> 3 SWITCH ON the side lights.
 <p>VFE0003181</p>	<input type="checkbox"/> Measure the voltage between the right-hand license plate lamp, connector C760, pin 1, circuit 29S-LF22 (OG/BK), wiring harness side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes LOCATE and RECTIFY the break in circuit 31-DA25 (BK) between soldered connection S201 and soldered connection S24 using the Wiring Diagrams. CHECK the operation of the system. → No LOCATE and RECTIFY the break in the circuit(s) between fuse F33 (7.5 A) (CJB) and the left-hand license plate lamp using the Wiring Diagrams. CHECK the operation of the system.
B21: CHECK GROUND CONNECTION OF LEFT-HAND LICENSE PLATE LAMP	
	<input checked="" type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> Disconnect left-hand license plate lamp from connector C759.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0003180

DETAILS/RESULTS/ACTIONS

- 3** Measure the resistance between the left-hand license lamp, connector C759, pin 1, circuit 31-LF21 (BK), wiring harness side and ground.

- Is a resistance of less than 2 ohms registered?

→ **Yes**

CHECK and if necessary RENEW the license plate lamp. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the license plate lamp and soldered connection S201 using the wiring diagrams. Check the operation of the system.

B22: CHECK VOLTAGE SUPPLY TO RIGHT-HAND LICENSE PLATE LAMP

- 1** Ignition switch in position 0.

- 2** Disconnect right-hand license plate lamp from connector C760.

- ☐ Ignition switch in position II.

- 4** SWITCH ON the side lights.

- 5** Measure the voltage between the right-hand license plate lamp, connector C760, pin 1, circuit 29S-LF22 (OG/BK), wiring harness side and ground.

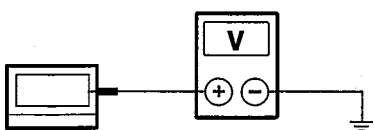
- Is battery voltage measured?

→ **Yes**

GO to B23.

→ **No**

LOCATE and RECTIFY the break in the circuit between the left-hand license plate lamp and the right-hand license plate lamp using the wiring diagrams. Check the operation of the system.



VFE0003181

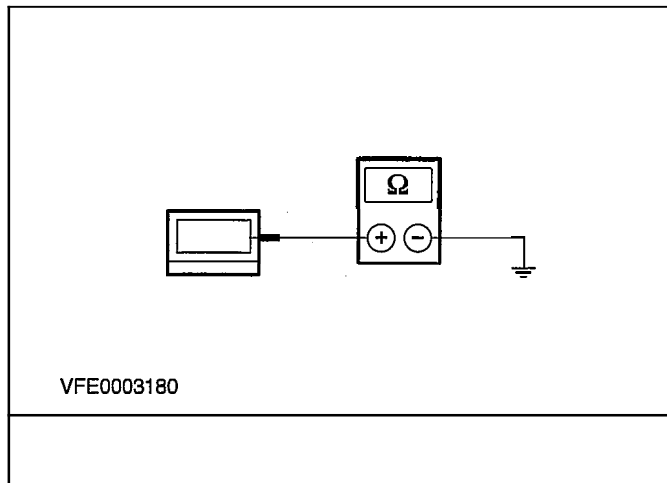
B23: CHECK GROUND CONNECTION OF RIGHT-HAND LICENSE PLATE LAMP

- 1** Ignition switch in position 0.

- 2** Disconnect right-hand license plate lamp from connector C761.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS RESULTS ACTIONS

- 3 Measure the resistance between the right-hand license plate lamp, connector C761, pin 1, circuit 31-LF22 (BK), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
- **Yes**
CHECK and INSTALL A NEW license plate lamp. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the break in the circuit between the right-hand license plate lamp and soldered connection S201 using the wiring diagrams. Check the operation of the system.

PINPOINT TEST Z : PARKING LAMPS, REAR LAMPS AND LICENSE PLATE LAMPS LIT CONTINUOUSLY.

TEST CONDITIONS

DETAILS RESULTS ACTIONS

C1: DETERMINE THE FAULT CONDITION

- 1 Ignition switch in position 0.
- 2 Disconnect fuse F22 (7.5 A) (CJB).
- 3 Disconnect fuse F23 (7.5 A) (CJB).
- 4 Disconnect fuse F33 (7.5 A) (CJB).
- 5 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

6 CHECK the parking lamps.

- Are the left-hand parking lamps illuminated continuously?

→ **Yes**

- Vehicles without trailer socket: LOCATE AND RECTIFY the short to battery voltage in the circuits connected to fuse F22 (7.5 A) (CJB), output side, using the Wiring Diagrams. CHECK the operation of the system.

- Vehicles with trailer socket built before 0312004: LOCATE AND RECTIFY the short to battery voltage in the circuits connected to fuse F22 (7.5 A) (CJB), output side, using the Wiring Diagrams. CHECK the operation of the system. If the concern persists, CHECK and if necessary INSTALL A NEW trailer control unit. CHECK the operation of the system.

- Vehicles with trailer socket built from 0312004: LOCATE and RECTIFY short to battery voltage in the circuits connected to soldered connection S1006 using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

- Right-hand parking lights are lit continuously, vehicles without trailer socket: LOCATE AND RECTIFY the short to battery voltage in the circuits connected to fuse F23 (7.5 A) (CJB), output side, using the Wiring Diagrams. CHECK the operation of the system.

- Right-hand parking lamps lit continuously, vehicles with trailer socket built before 0312004: LOCATE AND RECTIFY the short to battery voltage in the circuits connected to fuse F23 (7.5 A) (CJB), output side, using the Wiring Diagrams. CHECK the operation of the system. If the concern persists, CHECK and if necessary INSTALL A NEW trailer control unit. CHECK the operation of the system.

- Right-hand parking lamps lit continuously, vehicles with trailer socket built from 0312004: LOCATE and RECTIFY short to battery voltage in the circuits connected to soldered connection S1007 using the Wiring Diagrams. CHECK the operation of the system.

- License plate lamps lit continuously, vehicles built before 0812005: GO to C2.

DIAGNOSIS AND TESTING

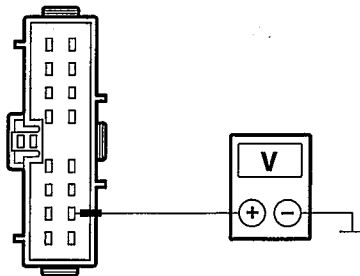
TEST CONDITIONS	DETAILS RESULTS ACTIONS
	<p>- License plate lamps lit continuously, vehicles built from 0812005: LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S9 using the Wiring Diagrams. CHECK the operation of the system.</p> <p>- No malfunction detected: GO to C3.</p>
C2: CHECK THE GENERIC ELECTRONIC MODULE (GEM).	
	1 Ignition switch in position 0.
	2 Disconnect Fuse F24 (20 A) (CJB).
	3 Disconnect Fuse F25 (15 A) (CJB).
	4 Disconnect Fuse F27. - Vehicles built before 0312004: 10 A (CJB) - Vehicles built from 0312004: 15 A (CJB)
	5 Disconnect Fuse F38 (7.5 A) (CJB).
	<p>6 Ignition switch in position II.</p> <ul style="list-style-type: none"> Do the license plate lamps illuminate continuously? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S9 using the wiring diagrams. CHECK the operation of the system.</p> <p>→ No RENEW the GEM. CHECK the operation of the system.</p>
C3: DETERMINE THE FAULT CONDITION	
	1 Ignition switch in position 0.
	2 Connect fuse F22 (7.5 A) (CJB).
	3 Disconnect headlight switch from connector C338.
	4 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>5 CHECK the parking lamps.</p> <ul style="list-style-type: none"> Are the left-hand parking lamps illuminated continuously? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles with daytime running lights, built from 0812005: GO to C4. Vehicles with automatic headlamps: GO to C4. All other vehicles: LOCATE AND RECTIFY short to battery voltage in circuits 29S-DB8 (OG/BU) or 29S-DD33 (OG), which are connected to the corresponding bridge in the CJB, using the Wiring Diagrams. CHECK the operation of the system. <p>→ No</p> <ul style="list-style-type: none"> Vehicles without daytime running lights: INSTALL A NEW headlight switch. CHECK the operation of the system. Vehicles with daytime running lights: GO to C5.
C4: CHECK THE GENERIC ELECTRONIC MODULE (GEM).	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Fuse F17 (15 A) (CJB).</p> <p>3 Disconnect Fuse F24 (20 A) (CJB).</p> <p><input type="checkbox"/> Disconnect Fuse F25 (15 A) (CJB).</p> <p>5 Disconnect Fuse F27 (15 A) (CJB).</p> <p>6 Disconnect Fuse F38 (7.5 A) (CJB).</p> <p>7 Ignition switch in position II.</p> <ul style="list-style-type: none"> Do the left-hand parking lamps illuminate continuously? <p>→ Yes</p> <p>LOCATE and RECTIFY short to battery voltage in the circuits connected to soldered connection S16 using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No</p> <p>RENEW the GEM. CHECK the operation of the system.</p>
C5: CHECK HEADLIGHT SWITCH	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0033878

DETAILS/RESULTS/ACTIONS

- 2 Measure the voltage between the headlamp switch, connector C338, pin 15, circuit 15-LE32 (GN/WH), wiring harness side and ground.

• Is battery voltage measured?

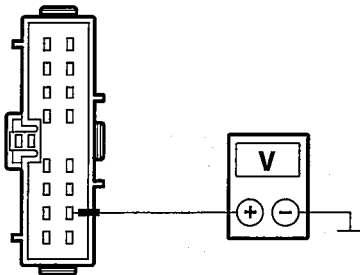
→ **Yes**

- Vehicles built before 08/2005: GO to C6.
- Vehicles built from 08/2005: GO to C7.

→ **No**

INSTALL A NEW headlight switch. CHECK the operation of the system.

C6: DETERMINE THE FAULT CONDITION



VFE0033878

- 1 Disconnect Fuse F40 (10 A) (CJB).

- 2 Measure the voltage between the headlamp switch, connector C338, pin 15, circuit 15-LE32 (GN/WH), wiring harness side and ground.

• Is battery voltage measured?

→ **Yes**

LOCATE AND RECTIFY the short to battery voltage in the circuits connected to fuse F40 (15 A) (CJB), output side, using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

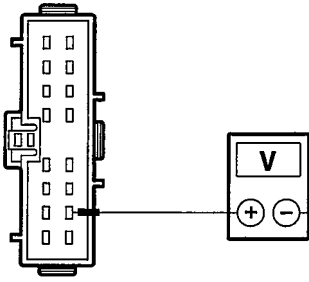
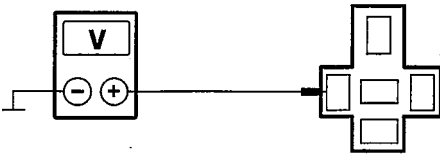
LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S1 using the Wiring Diagrams. CHECK the operation of the system. If the concern persists:

REFER to: ~~Daytime Running Lamps (DRL)~~
(417-04, Diagnosis and Testing).

C7: DETERMINE THE FAULT CONDITION

- 1 Disconnect Automatic headlamps relay from socket C418.

DIAGNOSIS AND TESTING

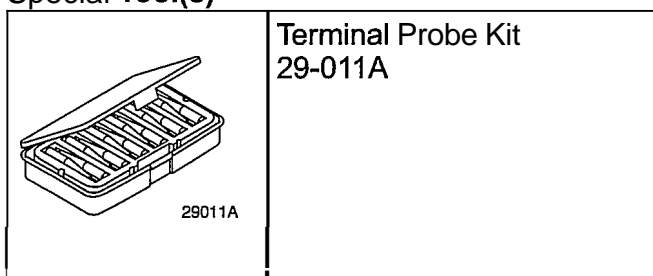
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033878</p>	<p>2 Measure the voltage between the headlamp switch, connector C338, pin 15, circuit 15-LE32 (GN/WH), wiring harness side and ground.</p> <ul style="list-style-type: none">• Is battery voltage measured? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in the circuits connected to the automatic headlamps relay, socket C418, pin 5 using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No GO to C8.</p>
C8: RULE OUT THE AUTOMATIC HEADLAMPS RELAY AS A SOURCE OF THE FAULT	
 <p>VFE0026275</p>	<p>1 Measure the voltage-between the automatic headlamps relay, socket C418, pin 1, circuit 15-LE36 (GNNVH), socket side and ground.</p> <ul style="list-style-type: none">• Is battery voltage measured? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S1 using the Wiring Diagrams. CHECK the operation of the system. If the concern persists:</p> <p>REFER to: Tagfahrlicht (DRL) (417-04, Diagnosis and Testing).</p>
	<p>→ No RENEW the automatic headlamps relay. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

Reversing Lamps — Vehicles Built Up To: 1012005

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)



Terminal Probe Kit
29-011A

NOTE: If the generic electronic module (GEM) is changed, the new one must be configured. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module. REFER to:

Communications Network - Vehicles Built Up To: 1012005 (418-00, Diagnosis and Testing),
Generic Electronic Module (GEM) - Vehicles Built Up To: 1012005 (419-10, Diagnosis and Testing).

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Inspection and Checking

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

NOTE: If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

REFER to: Module Configuration (418-01, Diagnosis and Testing).

Visual Inspection

Electrical
<ul style="list-style-type: none"> • Fuse(s) • Lamp(s) • Connector(s) • Switches • Wiring loom

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.
4. If the cause of the concern cannot be determined with a visual inspection, proceed to the Symptom Chart.

Symptom Chart

Symptom Chart

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> • The reversing lamp is inoperative 	<ul style="list-style-type: none"> • Fuse • Circuit(s) • Rear lamp assembly • Reversing lamp switch • Reversing lamp relay • Transmission range sensor • Trailer control unit • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test A.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The reversing lamp is lit continuously 	<ul style="list-style-type: none"> Circuit(s) Reversing lamp switch Reversing lamp relay Powertrain control module (PCM) Audio/navigation control panel Generic Electronic Module (GEM) Transmission range sensor Transmission control module (TCM). 	<ul style="list-style-type: none"> GO to Pinpoint Test B.

System Checks

NOTE:Use a digital multimeter for all electrical measurements.

PINPOINT TEST AA : THE REVERSING LAMP IS INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK FUSE F48 (7.5 A) (CJB).	
	<input checked="" type="checkbox"/> 1 Ignition switch in position 0.
	<input checked="" type="checkbox"/> 2 Disconnect fuse F48 (7.5 A) (CJB).
	<input type="checkbox"/> CHECK Fuse F48 (7.5 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK.? → Yes GO to A2. → No RENEW fuse F48 (7.5 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
A2: CHECK THE VOLTAGE SUPPLY TO FUSE F48 (7.5 A) (CJB) FOR OPEN CIRCUIT	
	<input checked="" type="checkbox"/> 1 Connect fuse F48 (7.5 A) (CJB).
	<input type="checkbox"/> Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

- 3 Measure the voltage between fuse F48 (7.5 A) (CJB) and ground.

• Is battery voltage measured?

→ **Yes**

- Vehicles with manual transmission and with Durashift EST GO to A3.
- Vehicles with 4-speed automatic transmission (AW81-40): GO to A6.

→ **No**

LOCATE AND RECTIFY the break in the voltage supply to fuse F48 (7.5 A) (CJB) using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.

A3: CHECK VOLTAGE SUPPLY TO THE REVERSING LAMP SWITCH FOR OPEN CIRCUIT

Ignition switch in position 0.

- 2 Disconnect reversing lamp switch from connector C425.

- 3 Ignition switch in position II.

Measure the voltage between the reversing lamp switch, connector C425, pin 1, circuit 15-LG28 (GN/WH), wiring harness side and ground.

• Is battery voltage measured?

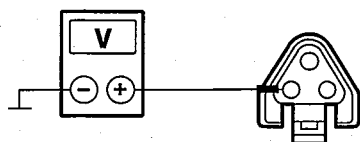
→ **Yes**

GO to A4.

→ **No**

LOCATE and RECTIFY the break in the circuit between fuse F48 (CJB) and the reversing lamp switch using the wiring diagrams. CHECK the operation of the system.

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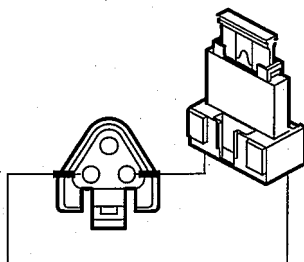


A4: CHECK REVERSING LAMP SWITCH

- 1 Ignition switch in position 0.

- 2 Connect a fused jumper wire (7.5 A) at the reversing lamp switch, connector C425, between pin 1, circuit 15-LG28 (GN/WH) and pin 2, circuit 15S-LG5 (GN/RD) (diesel engine) or 15S-LG1 (GNNE) (petrol engine), wiring harness side.

VFE0013668

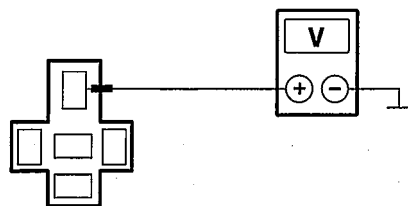


DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div>3 Ignition switch in position II.</div> <div> <input type="checkbox"/> CHECK the operation of the reversing lamp. </div> <div> <ul style="list-style-type: none"> Does the reversing lamp illuminate? </div> <div>→ Yes</div> <div> INSTALL A NEW reversing lamp switch. CHECK the operation of the system. </div> <div>→ No</div> <div> <ul style="list-style-type: none"> Vehicles without trailer socket: GO to A5. Vehicles with trailer socket: GO to A12. </div>
A5: CHECK THE GROUND CONNECTION OF THE REAR LAMP ASSEMBLY FOR OPEN CIRCUIT	
	<div> <input type="checkbox"/> Ignition switch in position 0. </div> <div> <input type="checkbox"/> SWITCH ON the parking lamps. </div> <div>3 Check the rear parking lamp.</div> <div> <ul style="list-style-type: none"> Does the parking lamp illuminate? </div> <div>→ Yes</div> <div> LOCATE and RECTIFY the break in circuits 15S-LG5 (GN/RD), 15S-LG1 (GNNE) and 15S-LG39 (GN/OG), between the reversing lamp switch and the rear lamp assembly using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system. </div> <div>→ No</div> <div> <ul style="list-style-type: none"> - LHD: LOCATE and RECTIFY the break in circuit 31-LF24 (BK), between the right-hand rear lamp assembly and ground G18 using the wiring diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system. - RHD: LOCATE and RECTIFY the break in circuit 31-LF23 (BK) between the left-hand rear lamp assembly and soldered connection S24 using the wiring diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system. </div>
A6: CHECK VOLTAGE SUPPLY TO THE REVERSING LAMP RELAY FOR OPEN CIRCUIT	
	<div>1 Ignition switch in position 0.</div> <div> <input type="checkbox"/> Disconnect reversing lamp relay from socket C434. </div> <div>3 Ignition switch in position II.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0036754

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between the reversing lamp relay, socket C434, pin 3, circuit 15-LG28 (GNWH), wiring harness side and ground.

- Does the meter display battery voltage?

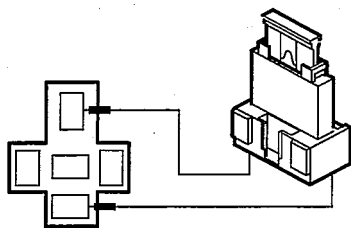
→ **Yes**

GO to A7.

→ **No**

LOCATE and RECTIFY the break in the circuit between fuse F48 (CJB) and the reversing lamp relay using the Wiring Diagrams. CHECK the operation of the system.

A7: NARROW DOWN THE CAUSE OF THE FAULT



VFE0036753

- ☐ Ignition switch in position 0.

- 2** Connect a fused jumper wire (7.5 A) at reversing lamp relay, socket C434, between pin 3, circuit 15-LG28 (GNWH), wiring harness side and pin 5, circuit 15S-LG1 (GNNE), wiring harness side.

- 3** Ignition switch in position II.

- 4** CHECK the operation of the reversing lamp.

- Does the reversing lamp illuminate?

→ **Yes**

GO to A9.

→ **No**

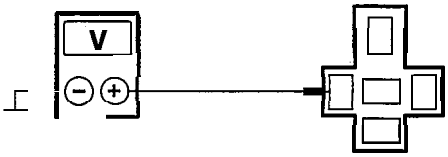
- Vehicles without trailer socket: GO to A8.
- Vehicles with trailer socket: GO to A12.

A8: CHECK THE GROUND CONNECTION OF THE REAR LAMP ASSEMBLY FOR OPEN CIRCUIT

- 1** Ignition switch in position 0.

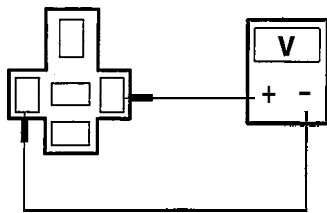
- ☐ SWITCH ON the parking lamps.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p><input type="checkbox"/> Check the rear parking lamp.</p> <ul style="list-style-type: none"> Does the parking lamp illuminate? <p>→ Yes LOCATE and RECTIFY the break in circuits 15S-LG1 (GNNE) or 15S-LG39 (GN/OG) between the reversing lamp switch and the rear lamp assembly using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> - LHD: LOCATE and RECTIFY the break in circuit 31-LF24 (BK), between the right-hand rear lamp assembly and ground G18 using the wiring diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system. - RHD: LOCATE and RECTIFY the break in circuit 31-LF23 (BK) between the left-hand rear lamp assembly and soldered connection S24 using the wiring diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.
A9: CHECK CIRCUIT 15S-TC6 (GNNE) FOR OPEN CIRCUIT	
 <p>VFE0026275</p>	<p>1 Measure the voltage between the reversing lamp relay, socket C434, pin 1, circuit 15S-TC6 (GNNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A10.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between pin 1 and pin 3 on the reversing lamp relay using the Wiring Diagrams. If necessary RENEW the engine compartment relay box. CHECK the operation of the system.</p>
A10: CHECK REVERSING LAMP RELAY	
	<p>1 ENGAGE reverse gear</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0038790

DETAILS/RESULTS/ACTIONS

- 2 Measure the voltage between the reversing lamp relay, socket C434, pin 1, circuit 15S-TC6 (GNNE), wiring harness side and pin 2, circuit 91S-TC6 (BKNE), wiring harness side.

• Does the meter display battery voltage?

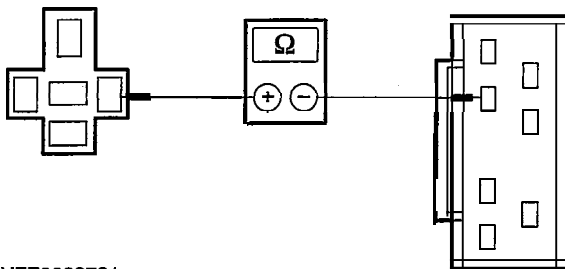
→ **Yes**

RENEW the reversing lamp relay. CHECK the operation of the system.

→ **No**

GO to A11.

A11: CHECK CONTROL WIRE 91S-TC6 (BKIYE) AND 91S-TA1 (BK/BU) OF REVERSING LAMP RELAY FOR OPEN CIRCUIT



VFE0038791

- 1 Ignition switch in position 0.

- 2 Disconnect Transmission range sensor from connector C431.

- 3 Measure the resistance between the reversing lamp relay, socket C434, pin 2, circuit 91-TC6 (BKNE), wiring harness side and the transmission range sensor, connector C431, pin 2, circuit 91S-TA1 (BWBU), wiring harness side.

• Is a resistance of less than 2 ohms registered?

→ **Yes**

RENEW the transmission range sensor. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the reversing lamp relay and the transmission range sensor using the Wiring Diagrams. CHECK the operation of the system.

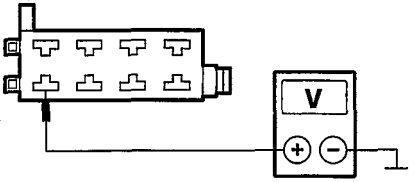
A12: CHECK THE TRAILER CONTROL UNIT

- 1 Ignition switch in position 0.

- 2 Connect Following component.

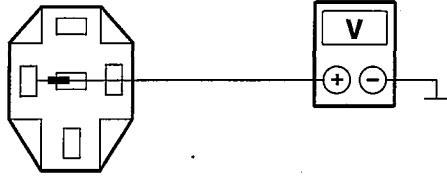
- Vehicles with manual transmission and Durashift EST Reversing lamp switch to connector C425
- Vehicles with 4 speed automatic transmission (AW81-40): reversing lamp relay to socket C434

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSIREULTSIACTIONS
 <p>VFE0033913</p>	<input type="checkbox"/> Disconnect Following component. <ul style="list-style-type: none">- Vehicles built before 0312004: Trailer control unit from connector C1035- Vehicles built from 0312004: Trailer relay, reversing lamp from socket C1044
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> Engage reverse gear.
	<input type="checkbox"/> Vehicles built before 0312004.
	<input type="checkbox"/> Measure the voltage between the trailer control unit C1035, pin 2, circuit (VT/OG), wiring harness side and ground.
	<input checked="" type="checkbox"/> Vehicles built from 0312004.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0016095

DETAILS/RESULTS/ACTIONS

Measure the voltage between the trailer relay, reversing lamp, connector C1044, circuit (BWBU), socket side and ground.

- Is battery voltage measured?

→ **Yes**

- Vehicles built before 03/12/2004: GO to A13.
- Vehicles built from 03/12/2004: GO to A20.

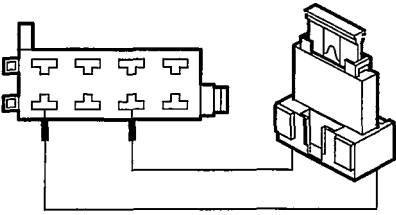
→ **No**

- Vehicles built before 03/12/2004: Vehicles with manual transmission and Durashift EST LOCATE and RECTIFY the break in the circuits between the reversing lamp switch and the trailer control unit using the Wiring Diagrams. CHECK the operation of the system.
- Vehicles built from 03/12/2004: Vehicles with manual transmission and Durashift EST LOCATE and RECTIFY the break in the circuits between the reversing lamp switch and the trailer relay, reversing lamp using the Wiring Diagrams. CHECK the operation of the system.
- Vehicles built before 03/12/2004: Vehicles with 4 speed automatic transmission (AW81-40): LOCATE and RECTIFY the break in the circuits between the reversing lamp relay and the trailer control unit using the Wiring Diagrams. CHECK the operation of the system.
- Vehicles built from 03/12/2004: Vehicles with 4 speed automatic transmission (AW81-40): LOCATE and RECTIFY the break in the circuits between the reversing lamp relay and the trailer relay, reversing lamp using the Wiring Diagrams. CHECK the operation of the system.

A13: CHECK THE TRAILER CONTROL UNIT

- 1 Ignition switch in position 0.

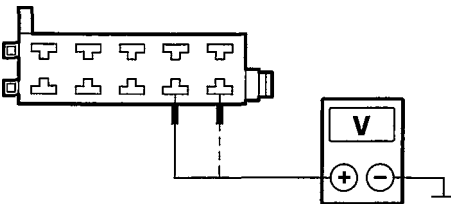
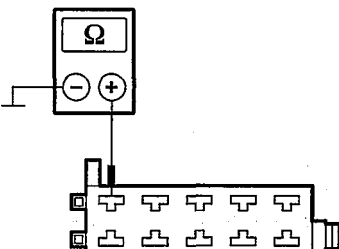
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033914</p>	<p>2 Connect a fused jumper wire (7.5 A) at the trailer control unit, connector C1035, between pin 2, circuit (VT/OG) and pin 6, circuit (BWBU), wiring harness side.</p>
	<p>3 Ignition switch in position II.</p> <p>4 CHECK the operation of the reversing lamp.</p> <ul style="list-style-type: none"> Does the reversing lamp illuminate? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles built before 1012002: GO to A14. Vehicles built from 1012002: GO to A16. <p>→ No</p> <p>GO to A20.</p>
A14: CHECK FUSE F31 (20 A) (CJB).	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect fuse F31 (20 A) (CJB).</p> <p>3 CHECK Fuse F31 (20 A) (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK.? <p>→ Yes</p> <p>GO to A15.</p> <p>→ No</p> <p>RENEW fuse F31 (20 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>
A15: CHECK THE VOLTAGE SUPPLY TO FUSE F31 (20 A) (CJB) FOR OPEN CIRCUIT	
	<p>1 Connect fuse F31 (20 A) (CJB).</p> <p>2 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Measure the voltage between fuse F31 (20 A) (CJB) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to A18.</p> <p>→ No LOCATE AND RECTIFY the break in the voltage supply to fuse F31 (20 A) (CJB) using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.</p>
A16: CHECK FUSE F56 (20 A) (CJB).	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect fuse F56 (20 A) (CJB).</p> <p>3 CHECK Fuse F56 (20 A) (CJB).</p>
	<ul style="list-style-type: none"> Is the fuse OK.? <p>→ Yes GO to A17.</p> <p>→ No RENEW fuse F56 (20 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>
A17: CHECK THE VOLTAGE SUPPLY TO FUSE F56 (20 A) (CJB) FOR OPEN CIRCUIT	
	<p>1 Connect fuse F56 (20 A) (CJB).</p> <p>2 Ignition switch in position II.</p> <p>3 Measure the voltage between fuse F56 (20 A) (CJB) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to A18.</p> <p>→ No LOCATE AND RECTIFY the break in the voltage supply to fuse F56 (20 A) (CJB) using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.</p>
A18: CHECK THE VOLTAGE SUPPLY TO THE TRAILER CONTROL UNIT FOR OPEN CIRCUIT	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect trailer control unit from connector C1041.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033871</p>	<p>__ Ignition switch in position II.</p> <p>1 Measure the voltage between the trailer control unit, connector C1041, pin 8, circuit (RD), wiring harness side and pin 10, circuit (RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured in both cases? <p>→ Yes GO to A19.</p> <p>→ No</p> <ul style="list-style-type: none"> Vehicles built before 1012002: LOCATE and RECTIFY break in the relevant circuit between fuse F31 (CJB) and the trailer control unit using the Wiring Diagrams. If necessary CHECK and RENEW the central junction box (CJB). CHECK the operation of the system. Vehicles built from 1012002: LOCATE and RECTIFY the break in the relevant circuit between fuse F56 (CJB) and the trailer control unit using the Wiring Diagrams. If necessary CHECK and RENEW the central junction box (CJB). CHECK the operation of the system.
A19: CHECK THE GROUND CONNECTION OF THE TRAILER CONTROL UNIT FOR OPEN CIRCUIT	
 <p>VFE0033872</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Measure the resistance between the trailer control unit, connector C1041, pin 1, circuit (BN), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes RENEW the trailer control unit. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the relevant circuit (BN) between the trailer control unit and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.</p>
A20: CHECK GROUND CONNECTION TO REAR LAMP ASSEMBLY FOR OPEN CIRCUIT	
	<p>1 Ignition switch in position 0.</p> <p>2 Connect Following component.</p> <ul style="list-style-type: none"> Vehicles built before 0312004: Trailer control unit to connector C1035 Vehicles built from 0312004: Trailer relay, reversing lamp to socket C1044 <p>3 SWITCH ON the parking lamps (side lamps).</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- 4** Check the rear parking lamps (side lamps).
- Are the parking lamps (side lamps) illuminated?
- **Yes**
- Vehicles built before 03/12/2004: LOCATE and RECTIFY the break in circuits (BWBU) (LHD) or (BWBU) and (VTNE) (RHD) between the trailer control unit and the rear lamp assembly using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.
 - Vehicles built from 03/12/2004: LOCATE and RECTIFY the break in circuits (BWBU) and (WH/BK) (LHD) or (BWBU) and (VTNE) (RHD) between the trailer relay, reversing lamp and the rear lamp assembly using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.
- **No**
- LHD: LOCATE and RECTIFY the break in circuits (BK), (BN) or 31-LF24 (BK) between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.
 - RHD: LOCATE and RECTIFY the break in circuits (GN), (BN) or 31-LF23 (BK) between the rear lamp assembly and soldered connection S24 using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

PINPOINT TEST AB : THE REVERSING LAMP IS LIT CONTINUOUSLY

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B1: CHECK REVERSING LAMP SWITCH

- 1** Ignition switch in position 0.
- 2** Disconnect Following component.
- Vehicles with manual transmission and with Durashift EST: reversing lamp switch from connector C425
 - Vehicles with 4-speed automatic transmission (AW81-40): reversing lamp relay from socket C434
- 3** Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>4 Check the reversing lamp.</p> <ul style="list-style-type: none"> Does the reversing lamp remain continuously lit? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles without trailer socket: GO to B4. Vehicles built before 0312004: Vehicles with trailer socket: GO to B2. Vehicles built from 0312004: Vehicles with trailer socket: GO to B4. <p>→ No</p> <ul style="list-style-type: none"> Vehicles with manual transmission and with Durashift EST INSTALL A NEW reversing lamp switch. CHECK the operation of the system. Vehicles with 4-speed automatic transmission (AW81-40): GO to B7.
B2: RULE OUT TRAILER CONTROL UNIT AS CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	<p>1 Ignition switch in position 0.</p>
	<p>2 Disconnect Following fuse.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: Fuse F31 (20 A) (CJB) Vehicles built from 1012002: Fuse F56 (20 A) (CJB)
	<p>3 Ignition switch in position II.</p>
	<p>4 Check the reversing lamp.</p> <ul style="list-style-type: none"> Does the reversing lamp remain continuously lit? <p>→ Yes GO to B3.</p> <p>→ No RENEW the trailer control unit. CHECK the operation of the system.</p>
B3: NARROW DOWN THE FAULT CONDITION	
	<p>1 Ignition switch in position 0.</p>
	<p>2 Disconnect trailer control unit from connector C1035.</p>
	<p>3 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>4 Check the reversing lamp.</p> <ul style="list-style-type: none"> Does the reversing lamp remain continuously lit? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in circuits (BWBU) or (VTNE) between the trailer control unit and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No GO to B4.</p>
B4: RULE OUT THE GENERIC ELECTRONIC MODULE (GEM) AS POSSIBLE CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect fuse F20 (CJB).</p> <p><input type="checkbox"/> Disconnect fuse F24 (CJB).</p> <p><input type="checkbox"/> Disconnect fuse F25 (CJB).</p> <p>5 Disconnect fuse F26 (CJB).</p> <p>6 Disconnect fuse F27 (CJB).</p> <p><input type="checkbox"/> Disconnect fuse F38 (CJB).</p> <p>8 Disconnect fuse F46 (CJB).</p> <p>9 Disconnect fuse F47 (CJB).</p> <p>10 Ignition switch in position II.</p> <p>11 CHECK the reversing lamp.</p> <ul style="list-style-type: none"> Does the reversing lamp remain continuously lit? <p>→ Yes GO to B5.</p> <p>→ No RENEW the generic electronic module (GEM). CHECK the operation of the system.</p>
B5: RULE OUT AUDIO/NAVIGATION CONTROL UNIT AS POSSIBLE CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	<p>1 Ignition switch in position 0.</p> <p>2 Connect fuse F20 (CJB).</p> <p>3 Connect fuse F24 (CJB).</p> <p><input type="checkbox"/> Connect fuse F25 (CJB).</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div>5 Connect fuse F26 (CJB).</div> <div>6 Connect fuse F27 (CJB).</div> <div>7 Connect fuse F38 (CJB).</div> <div>8 Connect fuse F46 (CJB).</div> <div>9 Connect fuse F47 (CJB).</div> <div>10 Disconnect fuse F18 (CJB).</div> <div>11 Disconnect fuse F44 (CJB).</div> <div><input type="checkbox"/> Ignition switch in position II.</div> <div> 13 CHECK the reversing lamp. <ul style="list-style-type: none"> Does the reversing lamp remain continuously lit? → Yes <ul style="list-style-type: none"> Vehicles with diesel engines: GO to B6. Vehicles with petrol engines: LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S32 using the Wiring Diagrams. CHECK the operation of the system. → No <ul style="list-style-type: none"> RENEW the audio/navigation control panel CHECK the operation of the system. </div>
B6: RULE OUT THE POWERTRAIN CONTROL MODULE (PCM) AS POSSIBLE CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	<div>1 Ignition switch in position 0.</div> <div>2 Connect fuse F18 (CJB).</div> <div>3 Connect fuse F44 (CJB).</div> <div>4 Disconnect powertrain control module from connectors C370, C371 and C372.</div> <div>5 Ignition switch in position II.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- ☐ CHECK the reversing lamp.
- Does the reversing lamp remain continuously lit?
- **Yes**
LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S32 using the Wiring Diagrams. CHECK the operation of the system.
- **No**
INSTALL the powertrain control module (PCM). CHECK the operation of the system.

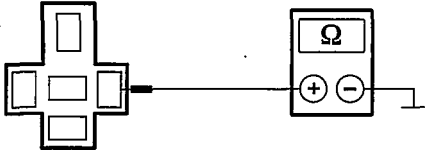
B7: RULE OUT TRANSMISSION RANGE SENSOR AS POSSIBLE CAUSE FOR A SHORT TO GROUND

- ☐ Ignition switch in position 0.
- ☐ Connect reversing lamp relay to socket C434.
- 3** Disconnect Transmission range sensor from connector C431.
- 4** Ignition switch in position II.
- 5** CHECK the reversing lamp.
- Does the reversing lamp remain continuously lit?
- **Yes**
GO to B8.
- **No**
RENEW the transmission range sensor. CHECK the operation of the system.

B8: RULE OUT TRANSMISSION CONTROL MODULE (TCM) AS POSSIBLE CAUSE FOR A SHORT TO GROUND

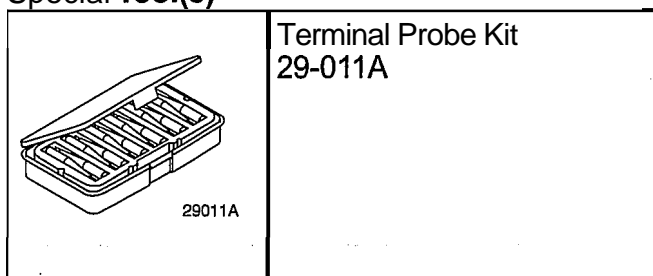
- 1** Ignition switch in position 0.
- ☐ Disconnect Transmission control module (TCM) from connector C429.
- 3** Ignition switch in position II.
- ☐ CHECK the reversing lamp.
- Does the reversing lamp remain continuously lit?
- **Yes**
GO to B9.
- **No**
RENEW the transmission control module (TCM). CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B9: CHECK REVERSING LAMP RELAY	
	1 Ignition switch in position 0.
	<input type="checkbox"/> Disconnect reversing lamp relay from socket C434.
	3 Ignition switch in position II.
 <p>VFE0026280</p>	<input type="checkbox"/> Measure the resistance between the reversing lamp relay, socket C434, pin 2, circuit 91S-TC6 (BK/YE), wiring harness side and ground. <ul style="list-style-type: none"> Is a resistance of more than 10,000 ohms measured? <p>→ Yes RENEW the reversing lamp relay. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the short to ground in the circuits connected to soldered connection S134 using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING**Reversing Lamps — Vehicles Built From: 10/2005**

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)

Terminal Probe Kit
29-011A

Inspection and Checking

NOTE:Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

NOTE:If the powertrain control module (PCM) is changed, the new one must be programmed. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module.

REFER to: Module Configuration (418-01, Diagnosis and Testing).

NOTE:If the generic electronic module (GEM) is changed, the new one must be configured. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module. REFER to:

Communications Network - Vehicles Built From:
10/2005 (418-00, Diagnosis and Testing),
Generic Electronic Module (GEM) - Vehicles Built
From:10/2005 (419-10, Diagnosis and Testing).

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection

Electrical
<ul style="list-style-type: none"> • Fuse(s) • Lamp(s) • Connector(s) • Switches Wiring loom

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.
4. If the concern is not visually evident, refer to the Symptom Chart.

Symptom Chart**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> • Reversing lamps inoperative 	<ul style="list-style-type: none"> • Fuse • Circuit(s) • Rear lamp assembly • Reversing lamp switch • Reversing lamp relay • Shift lever position sensor • Trailer control unit • Central junction box (CJB) 	<ul style="list-style-type: none"> • GO to Pinpoint Test A.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Reversing lamps on permanently 	<ul style="list-style-type: none"> Circuit(s) Reversing lamp switch Reversing lamp relay Powertrain control module (PCM) Audio/navigation control panel Generic Electronic Module (GEM) Shift lever position sensor Transmission control module (TCM). 	<ul style="list-style-type: none"> GO to Pinpoint Test B.

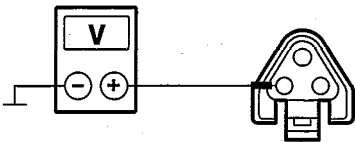
System Checks

NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST AC : REVERSING LAMPS INOPERATIVE

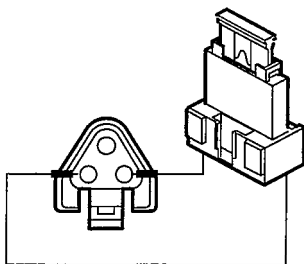
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
AI: NARROW DOWN THE FAULT CONDITION	
	1 Ignition switch in position II.
	2 Engage reverse gear.
	3 CHECK the reversing lamps. <ul style="list-style-type: none"> Is the left-hand reversing lamp inoperative? <ul style="list-style-type: none"> → Yes The left-hand reversing lamp is inoperative: GO to A12. → No <ul style="list-style-type: none"> -The right-hand reversing lamp is inoperative: GO to A14. - Both reversing lamps are inoperative: GO to A2.
A2: CHECK FUSE F48 (7.5 A) (CJB).	
	1 Ignition switch in position 0.
	2 Disconnect fuse F48 (7.5 A) (CJB).
	3 CHECK fuse F48 (7.5 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK.? <ul style="list-style-type: none"> → Yes GO to A3. → No RENEW fuse F48 (7.5 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A3: CHECK THE VOLTAGE SUPPLY TO FUSE F48 (7.5 A) (CJB) FOR OPEN CIRCUIT	
	<input type="checkbox"/> 1 Connect fuse F48 (7.5 A) (CJB).
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> 3 Measure the voltage between fuse F48 (7.5 A) (CJB) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes <ul style="list-style-type: none"> Vehicles with manual transmission and with Durashift EST GO to A4. Vehicles with 4-speed automatic transmission (AW81-40): GO to A6. → No <p>LOCATE AND RECTIFY the break in the voltage supply to fuse F48 (7.5 A) (CJB) using the Wiring Diagrams. If necessary RENEW the CJB. CHECK the operation of the system.</p>
A4: CHECK VOLTAGE SUPPLY TO THE REVERSING LAMP SWITCH FOR OPEN CIRCUIT	
	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> 2 Disconnect reversing lamp switch from connector C425.
	<input type="checkbox"/> Ignition switch in position II.
 <p>VFE0013674</p>	<input type="checkbox"/> 4 Measure the voltage between the reversing lamp switch, connector C425, pin 1, circuit 15-LG28 (GN/WH), wiring harness side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes <p>GO to A5.</p> → No <p>LOCATE and RECTIFY the break in the circuit between fuse F48 (7.5 A) (CJB) and the reversing lamp switch using the Wiring Diagrams. CHECK the operation of the system.</p>
A5: CHECK REVERSING LAMP SWITCH	
	<input type="checkbox"/> 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0013668

DETAILS/RESULTS/ACTIONS

- 2** Connect a fused jumper wire (7.5 A) to the reversing lamp switch, connector C425, between pin 1, circuit 15-LG28 (GN/WH) and
- On petrol engines: pin 2, circuit 15S-LG1 (GNNE), wiring harness side.
 - On diesel engines: pin 2, circuit 15S-LG5 (GN/RD), wiring harness side.

☐ Ignition switch in position II.

4 CHECK the operation of the reversing lamps.

- Do the reversing lamps illuminate?

→ **Yes**

INSTALL A NEW reversing lamp switch.
CHECK the operation of the system.

→ **No**

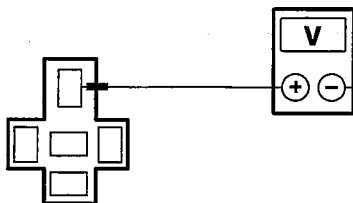
LOCATE and RECTIFY the break in the circuits between the reversing lamp switch and soldered connection S32 using the Wiring Diagrams. CHECK the operation of the system.

A6: CHECK VOLTAGE SUPPLY TO THE REVERSING LAMP RELAY FOR OPEN CIRCUIT

1 Ignition switch in position 0.

2 Disconnect reversing lamp relay from socket C434.

3 Ignition switch in position II.



VFE0036754

4 Measure the voltage between the reversing lamp relay, socket C434, pin 3, circuit 15-LG28 (GN/WH)/15-TC6 (GN/YE), socket side and ground.

- Does the meter display battery voltage?

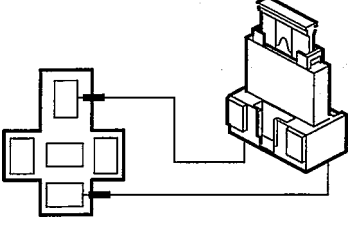
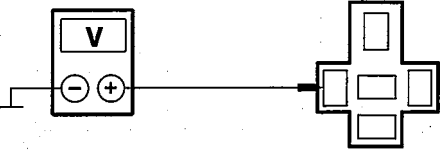
→ **Yes**

GO to A7.

→ **No**

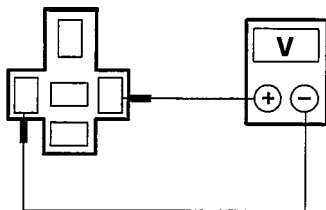
LOCATE and RECTIFY the break in the circuit between fuse F48 (7.5 A) (CJB) and the reversing lamp relay using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS RESULTS ACTIONS
A7: NARROW DOWN THE CAUSE OF THE FAULT	
 <p>VFE0036753</p>	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Connect a fused jumper wire (7.5 A) at reversing lamp relay, socket C434, between pin 3, circuit 15-LG28 (GN/WH)/15-TC6 (GNNE), socket side and pin 5, circuit 15S-LG1 (GNNE), socket side.</p>
	<p><input type="checkbox"/> Ignition switch in position II.</p> <p>4 CHECK the reversing lamps.</p> <ul style="list-style-type: none"> Do the reversing lamps illuminate? <p>→ Yes GO to A8.</p> <p>→ No LOCATE and RECTIFY the break in the circuits between the reversing lamp relay and soldered connection S32 using the Wiring Diagrams. CHECK the operation of the system.</p>
A8: CHECK CIRCUIT 15S-TC6 (GNNE) FOR OPEN CIRCUIT	
 <p>VFE0026275</p>	<p>1 Measure the voltage between the reversing lamp relay, socket C434, pin 1, circuit 15-TC6 (GNNE), socket side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A9.</p> <p>→ No LOCATE and RECTIFY the break in the circuit at the reversing lamp relay, socket C434, between pin 1 and pin 3 using the Wiring Diagrams. If necessary RENEW the engine compartment relay box. CHECK the operation of the system.</p>
A9: CHECK THE REVERSING LAMP RELAY	
	<p>1 ENGAGE reverse gear</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0038790

DETAILS/RESULTS/ACTIONS

- 2 Measure the voltage between the reversing lamp relay, socket C434, pin 1, circuit 15-TC6 (GNNE), socket side and pin 2, circuit 91S-TC6 (BK/YE), socket side.

• Does the meter display battery voltage?

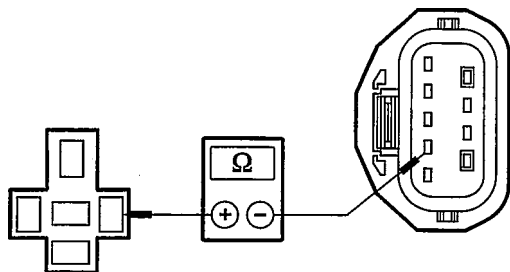
→ **Yes**

RENEW the reversing lamp relay. CHECK the operation of the system.

→ **No**

GO to A10.

A10: CHECK THE CONTROL CIRCUIT BETWEEN THE SHIFT LEVER POSITION SENSOR AND THE REVERSING LAMP RELAY FOR OPEN CIRCUIT



VFE64396

- 1 Ignition switch in position 0.

- 2 Disconnect Shift lever position sensor from connector C431.

- 3 Measure the resistance between the reversing lamp relay, socket C434, pin 2, circuit 91S-TC6 (BK/YE), socket side and the shift lever position sensor, connector C431, pin 2, circuit 91S-TA1 (BWBU), wiring harness side.

• Is a resistance of less than 2 ohms registered?

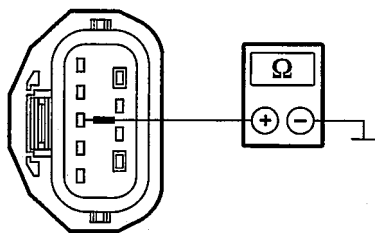
→ **Yes**

GO to A11.

→ **No**

LOCATE and RECTIFY the break in the circuit between the reversing lamp relay and the shift lever position sensor using the Wiring Diagrams. CHECK the operation of the system.

A11: RULE OUT THE SHIFT LEVER POSITION SENSOR AS THE CAUSE OF THE FAULT



VFE64397

- 1 Measure the resistance between the shift lever position, connector C431, pin 3, circuit 91-TA18 (BWRD), wiring harness side and ground.

• Is a resistance of less than 2 ohms registered?

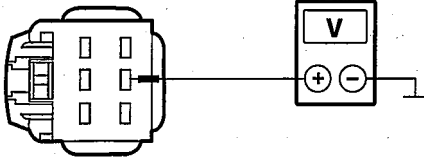
→ **Yes**

RENEW the shift lever position sensor. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the shift lever position sensor and soldered connection S132 using the Wiring Diagrams. CHECK the operation of the system.

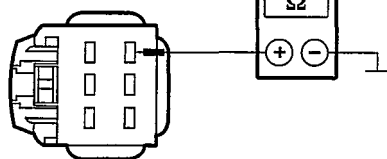
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A12: CHECK THE VOLTAGE SUPPLY TO THE LEFT-HAND REAR LAMP ASSEMBLY FOR OPEN CIRCUIT	
	<input checked="" type="checkbox"/> 1 Ignition switch in position 0.
	<input checked="" type="checkbox"/> 2 Disconnect Left-hand rear lamp assembly. <ul style="list-style-type: none"> - Vehicles without trailer socket: from connector C333 - Vehicles with trailer socket: from connector C333a
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> Engage reverse gear.
 <p>VFE64398</p>	<input type="checkbox"/> Measure the voltage between the left-hand rear lamp assembly <ul style="list-style-type: none"> - Vehicles without trailer socket: connector C333, pin 5, circuit 15S-LG39B (GN/OG), wiring harness side and ground. - Vehicles with trailer socket: Connector C333a, pin 5, circuit (VT/YE), wiring harness side and ground. <ul style="list-style-type: none"> • Does the meter display battery voltage? <p>→ Yes GO to A13.</p> <p>→ No LOCATE and RECTIFY the break in the circuits between soldered connection S32 and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.</p>
A13: CHECK THE GROUND CONNECTION TO THE LEFT-HAND REAR LAMP ASSEMBLY FOR OPEN CIRCUIT	
	<input checked="" type="checkbox"/> 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



VFE64389

- 2** Measure the resistance between left-hand rear lamp assembly
- Vehicles without trailer socket: connector C333, pin 4, circuit 31-LF23 (BK), wiring harness side and ground.
 - Vehicles with trailer socket: connector C333a, pin 4, circuit (BN), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?

→ **Yes**

CHECK and if necessary RENEW the rear lamp assembly. CHECK the operation of the system.

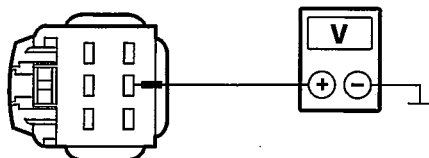
→ **No**

LOCATE and RECTIFY the break in the circuits between the rear lamp assembly and soldered connection S24 using the Wiring Diagrams. CHECK the operation of the system.

A14: CHECK VOLTAGE SUPPLY TO THE RIGHT-HAND REAR LAMP ASSEMBLY FOR OPEN CIRCUIT
☐ Ignition switch in position 0.

- ☐ Disconnect Right-hand rear lamp assembly.
- Vehicles without trailer socket: from connector C348
 - Vehicles with trailer socket: from connector C348a

☐ Ignition switch in position II.

4 Engage reverse gear.


VFE64398

- ☐ Measure the voltage between the right-hand rear lamp assembly
- Vehicles without trailer socket: connector C348, pin 5, circuit 15S-LG39A (GN/OG), wiring harness side and ground.
 - Vehicles with trailer socket: connector C348a, pin 5, circuit (WH/BK), wiring harness side and ground.

- Does the meter display battery voltage?

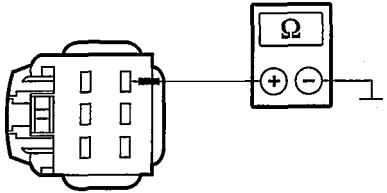
→ **Yes**

GO to A15.

→ **No**

LOCATE and RECTIFY the break in the circuits between soldered connection S32 and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A15: CHECK THE GROUND CONNECTION TO THE RIGHT-HAND REAR LAMP ASSEMBLY FOR OPEN CIRCUIT	
 <p>VFE64389</p>	<input type="checkbox"/> Ignition switch in position 0.
	<p>2 Measure the resistance between the right-hand rear lamp assembly</p> <ul style="list-style-type: none"> – Vehicles without trailer socket: connector C348, pin 4, circuit 31-LF24 (BK), wiring harness side and ground. – Vehicles with trailer socket: connector C348a, pin 4, circuit (WH/BK), wiring harness side and ground. <p>• Is a resistance of less than 2 ohms registered?</p> <p>→ Yes CHECK and if necessary RENEW the rear lamp assembly. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuits between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST AD : REVERSING LAMPS ON PERMANENTLY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: CHECK REVERSING LAMP SWITCH	
	1 Ignition switch in position 0.
	<p>2 Disconnect Corresponding component,</p> <ul style="list-style-type: none"> – Vehicles with manual transmission and with Durashift EST reversing lamp switch from connector C425 – Vehicles with 4-speed automatic transmission (AW81-40): reversing lamp relay from socket C434
	3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSRESULTSIACTIONS
	<p>CHECK the reversing lamps.</p> <ul style="list-style-type: none"> Do the reversing lamps illuminate continuously? <p>→ Yes GO to B2.</p> <p>→ No</p> <ul style="list-style-type: none"> Vehicles with manual transmission and with Durashift EST INSTALL A NEW reversing lamp switch. CHECK the operation of the system. Vehicles with 4-speed automatic transmission (AW81-40): GO to B5.
B2: RULE OUT THE GENERIC ELECTRONIC MODULE (GEM) AS POSSIBLE CAUSE FOR A SHORT TO BATTERY VOLTAGE	
	1 Ignition switch in position 0.
	2 Disconnect fuse F8 (7.5 A) (CJB).
	3 Disconnect fuse F17 (15 A) (CJB).
	4 Disconnect fuse F24 (20 A) (CJB).
	5 Disconnect fuse F25 (15 A) (CJB).
	6 Disconnect fuse F26 (20 A) (CJB).
	7 Disconnect fuse F27 (15 A) (CJB).
	8 Disconnect fuse F38 (7.5 A) (CJB).
	9 Disconnect fuse F46 (20 A) (CJB).
	Disconnect fuse F47 (10 A) (CJB).
	11 Ignition switch in position II.
	<p>12 CHECK the reversing lamps.</p> <ul style="list-style-type: none"> Do the reversing lamps illuminate continuously? <p>→ Yes GO to B3.</p> <p>→ No RENEW the generic electronic module (GEM). CHECK the operation of the system.</p>
B3: ELIMINATE THE AUDIO/NAVIGATION CONTROL PANEL AS THE CAUSE OF A SHORT TO BATTERY VOLTAGE	
	1 Ignition switch in position 0.
	2 Connect fuse F8 (7.5 A) (CJB).
	Connect fuse F17 (15 A) (CJB).

DIAGNOSIS AND TESTING

TEST CONDITIONS

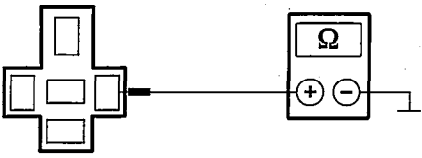
DETAILS RESULTS ACTIONS

	<input checked="" type="checkbox"/> 4	Connect fuse F24 (20 A) (CJB).
	<input checked="" type="checkbox"/> 5	Connect fuse F25 (15 A) (CJB).
	<input checked="" type="checkbox"/> 6	Connect fuse F26 (20 A) (CJB).
	<input type="checkbox"/>	Connect fuse F27 (15 A) (CJB).
	<input type="checkbox"/>	Connect fuse F38 (7.5 A) (CJB).
	<input checked="" type="checkbox"/> 9	Connect fuse F46 (20 A) (CJB).
	<input checked="" type="checkbox"/> 10	Connect fuse F47 (10 A) (CJB).
	<input checked="" type="checkbox"/> 11	Disconnect fuse F18 (15 A) (CJB).
	<input type="checkbox"/>	Disconnect fuse F44 (3 A) (CJB).
	<input checked="" type="checkbox"/> 13	Ignition switch in position II.
	<input checked="" type="checkbox"/> 14	CHECK the reversing lamps.
		<ul style="list-style-type: none"> Do the reversing lamps illuminate continuously?
		→ Yes <ul style="list-style-type: none"> Vehicles with diesel engines: GO to B4. Vehicles with petrol engines: LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S32 using the Wiring Diagrams. CHECK the operation of the system.
		→ No RENEW the audio/navigation control panel CHECK the operation of the system.
B4: RULE OUT THE POWERTRAIN CONTROL MODULE (PCM) AS POSSIBLE CAUSE FOR A SHORT TO BATTERY VOLTAGE		
	<input checked="" type="checkbox"/> 1	Ignition switch in position 0.
	<input checked="" type="checkbox"/> 2	Connect fuse F18 (15 A) (CJB).
	<input checked="" type="checkbox"/> 3	Connect fuse F44 (3 A) (CJB).
	<input checked="" type="checkbox"/> 4	Disconnect Powertrain control module (PCM) from connector C372, C377 or C384.
	<input checked="" type="checkbox"/> 5	Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> CHECK the reversing lamps. <ul style="list-style-type: none"> Do the reversing lamps illuminate continuously? → Yes LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S32 using the Wiring Diagrams. CHECK the operation of the system. → No INSTALL the powertrain control module (PCM). CHECK the operation of the system.
B5: ELIMINATE THE SHIFT LEVER POSITION SENSOR AS CAUSE FOR THE SHORT TO GROUND	
	<div>1</div> Ignition switch in position 0. <div>2</div> Connect reversing lamp relay to socket C434. <div>3</div> Disconnect Shift lever position sensor from connector C431. <div>4</div> Ignition switch in position II. <div>5</div> CHECK the reversing lamps. <ul style="list-style-type: none"> Do the reversing lamps illuminate continuously? → Yes GO to B6. → No RENEW the shift lever position sensor. CHECK the operation of the system.
B6: RULE OUT THE TRANSMISSION CONTROL MODULE (TCM) AS POSSIBLE CAUSE FOR A SHORT TO GROUND	
	<div>1</div> Ignition switch in position 0. <div>2</div> Disconnect Transmission control module (TCM) from connector C429. <div>3</div> Ignition switch in position II. <div>4</div> CHECK the reversing lamps. <ul style="list-style-type: none"> Do the reversing lamps illuminate continuously? → Yes GO to B7. → No RENEW the transmission control module (TCM). CHECK the operation of the system.

DIAGNOSIS AND TESTING

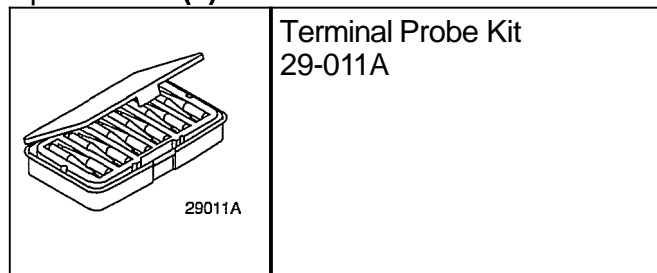
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B7: RULE OUT THE CONTROL CIRCUIT OF THE REVERSING LAMP RELAY AS THE SOURCE OF THE FAULT	
	1 Ignition switch in position 0.
	2 Disconnect reversing lamp relay from socket C434.
 <p>VFE0026280</p>	3 Measure the resistance between the reversing lamp relay, socket C434, pin 2, circuit 91S-TC6 (BK/YE), socket side and ground.
	<p>Is a resistance of more than 10,000 ohms measured?</p> <p>→ Yes RENEW the reversing lamp relay. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the short to ground in the circuits connected to soldered connection S134 using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

Fog Lamps

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)



Inspection and Checking

NOTE: Before reading out the vehicle-specific data, remake all the electrical connections in the vehicle, so that communication between the module and WDS is ensured.

NOTE: If the instrument cluster is changed, the new one must be reinitialised. For this purpose, the vehicle-specific data is read out of the module to be replaced using WDS and is transferred to the new module. REFER to: (413-01)

Instrument Cluster - Vehicles Built Up To:
10/2005 (Diagnosis and Testing),
Instrument Cluster - Vehicles Built From:
10/2005 (Diagnosis and Testing).

Symptom Chart

Symptom Chart

Symptom	Possible Sources	Action
• Fog lamps are inoperative	• Fuse • Circuit(s) • Headlight switch	• GO to Pinpoint Test A.
• Rear fog lamp(s) or front fog lamps inoperative	• Circuit(s) • Headlight switch	• GO to Pinpoint Test B.
• Individual fog lamps inoperative	• Circuit(s) • Right/left-hand front fog lamp. • Rear lamp assembly	• GO to Pinpoint Test C.
• Rear fog lamp(s) or front fog lamps illuminate continuously	• Circuit(s) • Headlight switch	• GO to Pinpoint Test D.

System Checks

NOTE: Use a digital multimeter for all electrical measurements.

1. Verify the customer concern.

2. Visually inspect for obvious signs of electrical damage.

Visual Inspection

Electrical
<ul style="list-style-type: none"> • Fuse(s) • Lamp(s) • Connector(s). • Switches • Wiring loom

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.

4. If the concern is not visually evident, refer to the Symptom Chart.

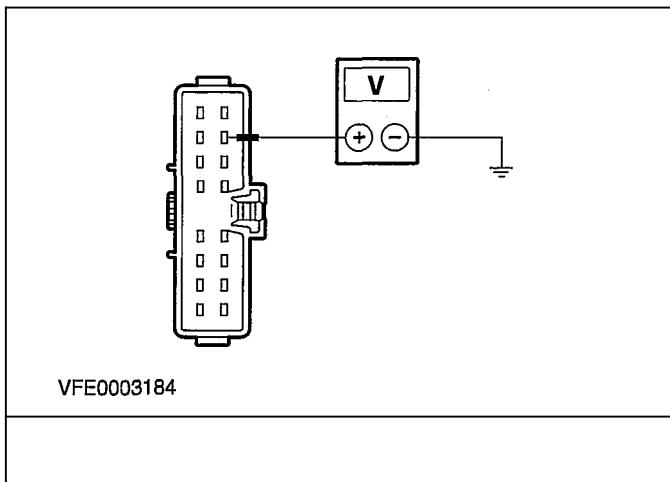
NOTE: A mechanical interlock in the headlight switch allows the fog lamps to be turned on only when the headlight switch is in the "Dipped beam ON" position.

DIAGNOSIS AND TESTING**PINPOINT TEST AE : FOG LAMPS ARE INOPERATIVE****TEST CONDITIONS****DETAILS/RESULTS/ACTIONS**

A1: CHECK FUSE F50 (20 A) (CJB).	
	1 Ignition switch in position 0.
	2 Disconnect Fuse F50 (20 A) (CJB).
	3 CHECK fuse F50 (20 A) (CJB). <ul style="list-style-type: none"> Is the fuse OK.? → Yes GO to A2. → No RENEW fuse F50 (20 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.
A2: CHECK THE VOLTAGE SUPPLY TO FUSE F50 (20A) (CJB) FOR OPEN CIRCUIT	
	1 Connect Fuse F50 (20 A) (CJB).
	2 Ignition switch in position II.
	<input type="checkbox"/> Measure the voltage between fuse F50 (20 A) (CJB) and ground. <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to A3. → No LOCATE AND RECTIFY the break in the voltage supply of fuse F50 (20 A) (CJB) using the Wiring Diagrams. CHECK the operation of the system.
A3: CHECK THE VOLTAGE AT THE HEADLIGHT SWITCH	
	1 Ignition switch in position 0.
	2 Disconnect headlight switch from connector C338.
	3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 4** Measure the voltage between the headlamp switch, connector C338, pin 7, circuit 15-LDI0 (GN/OG), wiring harness side and ground.
- Is battery voltage measured?
 - **Yes**
INSTALL A NEW headlight switch. CHECK the operation of the system.
 - **No**
LOCATE and RECTIFY the break in the circuit between fuse F50 (20A) (CJB) and the headlamp switch using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST AF : REAR FOG LAMP(S) OR FRONT FOG LAMPS INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B1: DETERMINE THE FAULT CONDITION

	1 Ignition switch in position II.
	2 Check operation of the fog lamps.
	3 Switch on the front fog lamps.
	<input type="checkbox"/> Switch on rear fog lamp(s) <ul style="list-style-type: none"> Do the front fog lamps illuminate? → Yes GO to B2. → No GO to B23.

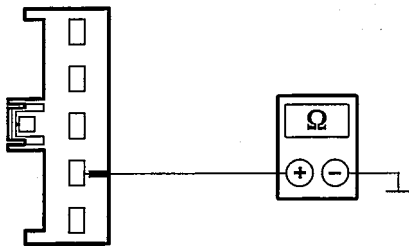
B2: CHECK THE HEADLIGHT SWITCH

	<input type="checkbox"/> Ignition switch in position 0.
	<input type="checkbox"/> Disconnect headlight switch from connector C338.
	3 Connect a fused jumper wire (20 A) at the headlamp switch, connector C338, between pin 7, circuit 15-LDI0 (GNIOG) and pin 2, circuit 15S-LD6A (GNNE), wiring harness side.

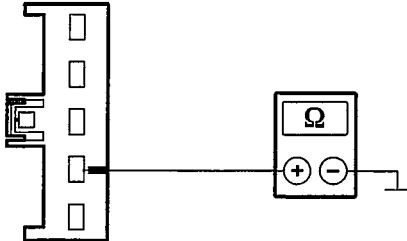
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

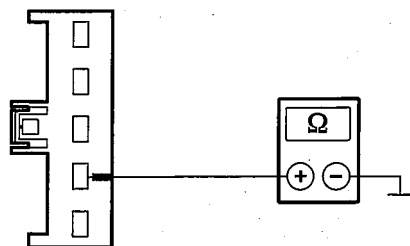
	<p><input type="checkbox"/> Ignition switch in position II.</p> <p>5 Switch on rear fog lamp(s)</p> <ul style="list-style-type: none"> Does/Do the rear fog lamp(s) illuminate? <p>→ Yes INSTALL A NEW headlight switch. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> LHDIRHD without trailer socket, built from 0812005: LOCATE and RECTIFY the break in the circuits between the headlamp switch and soldered connection S19 using the Wiring Diagrams. CHECK the operation of the system. LHD, vehicles without trailer socket, built before 0812005: GO to B3. RHD, vehicles without trailer socket, built before 0812005: GO to B4. LHD, vehicles with trailer socket, built before 0812005: GO to B5. RHD, vehicles with trailer socket, built before 0812005: GO to B14.
B3: CHECK GROUND CONNECTION OF REAR FOG LAMP (LHD)	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Disconnect left-hand rear lamp assembly from connector C333.</p>
 <p>VFE0033869</p>	<p>3 Measure the resistance between the left-hand rear lamp assembly, connector C333, pin 4, circuit 31-LF23 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes LOCATE and RECTIFY the break in circuit 15S-LD6A (GNNE) or 15S-LD6 (GNNE) between the headlight switch and the rear lamp assembly using the wiring diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.</p>
	<p>→ No LOCATE and RECTIFY the break in circuit 31-LF23 (BK) between the rear lamp assembly and soldered connection S24 using the wiring diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B4: CHECK GROUND CONNECTION OF REAR FOG LAMP (RHD)	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect right-hand rear lamp assembly from connector C348.
 <p>VFE0033869</p>	<ol style="list-style-type: none"> 3 Measure the resistance between the right-hand rear lamp assembly, connector C348, pin 4, circuit 31-LF24 (BK), wiring harness side and ground. <ul style="list-style-type: none"> • Is a resistance of less than 2 ohms registered? <p>→ Yes LOCATE and RECTIFY the break in circuit 15S-LD6A (GNNE) or 15S-LD6 (GNNE) between the headlight switch and the rear lamp assembly using the wiring diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in circuit 31-LF24 (BK), between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.</p>
B5: CHECK GROUND CONNECTION OF REAR FOG LAMP (LHD)	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect left-hand rear lamp assembly from connector C333a.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0033869

DETAILS/RESULTS/ACTIONS

- 3 Measure the resistance between the left-hand rear lamp assembly, connector C333a, pin 4:
- Vehicles built from 0312004, with 13-pin trailer socket: circuit (BN), wiring harness side and ground.
 - All other models: circuit (GN), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?

→ **Yes**

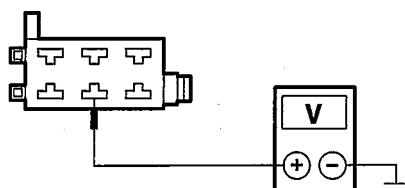
GO to B6.

→ **No**

- Vehicles built from 0312004, with 13-pin trailer socket: LOCATE and RECTIFY the break in circuit (BN) between the rear lamp assembly and soldered connection S1008 using the Wiring Diagrams. CHECK the operation of the system.
- All other models: LOCATE and RECTIFY the break in circuit (GN) or 31-LF23 (BK) between the rear lamp assembly and soldered connection S24 using the Wiring Diagrams. CHECK the operation of the system.

B6: CHECK CIRCUITS 15S-LD6(A) (GNNE) OR (RDNVH) FOR OPEN CIRCUIT

- ☐ Ignition switch in position 0.
- ☐ Connect Headlamp switch to connector C338.
- ☐ Disconnect Vehicles built before 0312004: Trailer control unit from connector C1030.
- 4 Disconnect Vehicles built from 0312004: Rear fog lamp cut-off relay from socket C1043.
- 5 Ignition switch in position II.
- 6 Switch on the REAR FOG LIGHT.

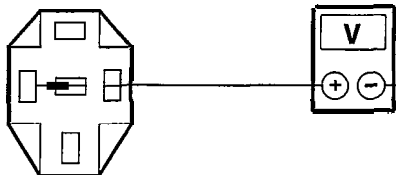


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- ☐ Vehicles built before 0312004: Measure the voltage between the trailer control unit, connector C1030, pin 4, circuit (RDNVH), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0016095

DETAILS/RESULTS/ACTIONS

Vehicles built from 0312004: Measure the voltage between the rear fog lamp cut-off relay, socket C1043, circuit (RDANH), wiring harness side and ground.

- Is battery voltage measured?

→ **Yes**

- Vehicles built before 0312004: GO to B7.
- Vehicles built from 0312004: GO to B12.

→ **No**

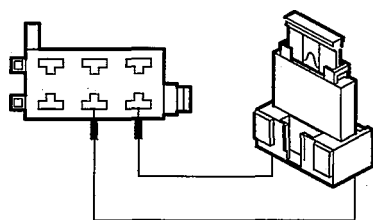
- Vehicles built before 0312004: LOCATE and RECTIFY the break in circuit(s) 15S-LD6(A) (GNNE) or (RDNVH) between the headlamp switch and the trailer control unit using the Wiring Diagrams. CHECK the operation of the system.

- Vehicles built from 0312004: LOCATE and RECTIFY the break in circuit(s) 15S-LD6(A) (GNNE) or (RD/WH) between the headlamp switch and the rear fog lamp cut-off relay using the Wiring Diagrams. CHECK the operation of the system.

B7: CHECK THE TRAILER CONTROL UNIT

Ignition switch in position 0.

Connect Left-hand rear lamp assembly to connector C333a.



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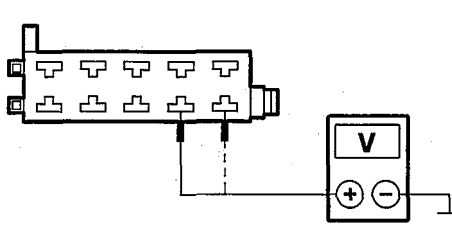
Connect a fused jumper wire (20 A) at the trailer control unit, connector C1030, between pin 4, circuit (RDNVH) and pin 6, circuit (VT/YE), wiring harness side.

4 Ignition switch in position II.

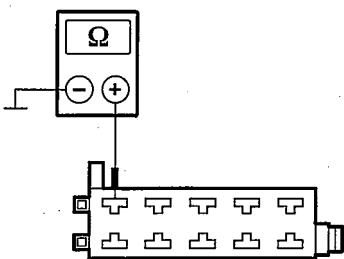
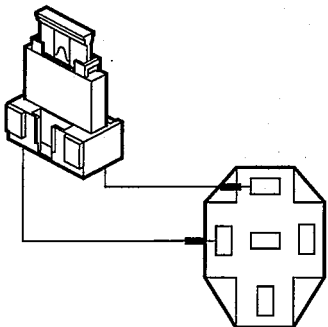
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>5 Switch on the REAR FOG LIGHT.</p> <ul style="list-style-type: none"> Does the rear fog lamp illuminate? <p>→ Yes GO to B8.</p> <p>→ No LOCATE and RECTIFY the break in circuit (VTNE) between the trailer control unit and rear lamp assembly using the wiring diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.</p>
B8: CHECK FUSE	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Fuse.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: F31 (20 A) (CJB) Vehicles built from 1012002: F56 (20 A) (CJB) <p><input type="checkbox"/> CHECK Fuse.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: F31 (20 A) (CJB) Vehicles built from 1012002: F56 (20 A) (CJB) <ul style="list-style-type: none"> Is the fuse OK.? <p>→ Yes GO to B9.</p> <p>→ No INSTALL A NEW fuse F31 (20 A) or F56 (20 A) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>
B9: CHECK VOLTAGE AT FUSE	
	<p>1 Connect Fuse.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: F31 (20 A) (CJB) Vehicles built from 1012002: F56 (20 A) (CJB) <p>2 Ignition switch in position II.</p>

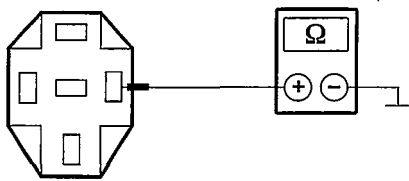
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Measure the voltage between:</p> <ul style="list-style-type: none"> - Vehicles built before 10/2002: Fuse F31 (20 A) (CJB) and ground. - Vehicles built from 10/2002: F56 (20 A) (CJB) and ground. <ul style="list-style-type: none"> • Is battery voltage measured? <p>→ Yes GO to B10.</p> <p>→ No</p> <ul style="list-style-type: none"> - Vehicles built before 10/2002: RECTIFY the break in the voltage supply of fuse F31 (20A) (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system. - Vehicles built from 10/2002: RECTIFY the break in the voltage supply of fuse F56 (20A) (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system.
B10: CHECK THE VOLTAGE SUPPLY OF THE TRAILER CONTROL UNIT	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Disconnect trailer control unit from connector C1041.</p> <p>3 Ignition switch in position II.</p>
 <p>VFE0033871</p>	<p>4 Measure the voltage between the trailer control unit, connector C1041, pin 8, circuit (RD), wiring harness side and pin 10, circuit (RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> • Is battery voltage registered following both measurements? <p>→ Yes GO to B11.</p> <p>→ No</p> <ul style="list-style-type: none"> - Vehicles built before 10/2002: LOCATE and RECTIFY the break in the circuit between fuse F31 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system. - Vehicles built from 10/2002: LOCATE and RECTIFY the break in the circuit between fuse F56 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

DIAGNOSIS AND TESTING

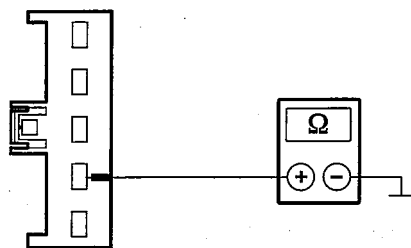
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B11: CHECK THE GROUND CONNECTION OF THE TRAILER CONTROL UNIT	
 <p>VFE0033872</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Measure the resistance between the trailer control unit, connector C1041, pin 1, circuit (BN), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes RENEW the trailer control unit. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit (BN) between the trailer control unit and ground connection G18 using the wiring diagrams. CHECK the operation of the system.</p>
B12: CHECK THE REAR FOG LAMP CUT-OFF RELAY	
 <p>VFE63314</p>	<p>1 Ignition switch in position 0.</p> <p>2 Connect Left-hand rear lamp assembly to connector C333a.</p> <p>3 Connect a fused jumper wire (20 A) at the rear fog lamp cut-off relay, socket C1043, between circuit (RD/WH) and circuit (VT/YE), socket side.</p>
	<p>4 Ignition switch in position II.</p> <p>5 Switch on the REAR FOG LIGHT.</p> <ul style="list-style-type: none"> Does the rear fog lamp illuminate? <p>→ Yes GO to B13.</p> <p>→ No LOCATE and RECTIFY the break in the circuit (VTNE) between the rear fog lamp cut-off relay and the rear lamp assembly using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B13: CHECK THE GROUND CONNECTION OF THE REAR FOG LAMP CUT-OFF RELAY	
 <p>E0031110</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the rear fog lamp cut-off relay, socket C1043, circuit (BN), wiring harness side and ground.</p> <ul style="list-style-type: none"> • is a resistance of less than 2 ohms registered? <p>→ Yes RENEW the rear fog lamp cut-off relay. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> - Vehicles with 7 pin trailer socket: LOCATE and RECTIFY the break in circuit (BN) or 31-LF24 (BK) between the rear lamp cut-off relay and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system. - Vehicles with 13 pin trailer socket: LOCATE and RECTIFY the break in circuit (BN) between the rear fog lamp cut-off relay and soldered connection S1008 using the Wiring Diagrams. CHECK the operation of the system.
	<p>B14: CHECK GROUND CONNECTION OF REAR FOG LAMP (RHD)</p> <p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Disconnect right-hand rear lamp assembly from connector C348a.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0033869

DETAILS RESULTS ACTIONS

- 3 Measure the resistance between the right-hand rear lamp assembly, connector C348a, pin 4:
- Vehicles built before 0312004: circuit (BK), wiring harness side and ground.
 - Vehicles built from 0312004: circuit (BN), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?

→ **Yes**

GO to B15.

→ **No**

- Vehicles built before 0312004: LOCATE and RECTIFY the break in circuit (BK) or 31-LF24 (BK) between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.
- Vehicles built from 0312004: LOCATE and RECTIFY the break in circuit (BN) or 31-LF24 (BK) between the rear lamp assembly and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.

B15: CHECK CIRCUITS 15S-LD6(A) (GNNE), (VT/OG), (BK/BU) AND (RDNVH) FOR OPEN CIRCUIT

1 Ignition switch in position 0.

2 Connect Headlamp switch to connector C338.

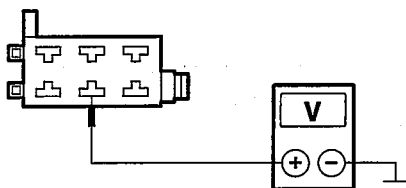
3 Disconnect Vehicles built before 03/2004: Trailer control unit from connector C1030.

4 Disconnect Vehicles built from 0312004: Rear fog lamp cut-off relay from socket C1043.

5 Ignition switch in position II.

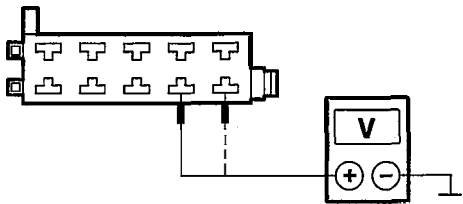
6 Switch on the REAR FOG LAMP.

7 Vehicles built before 0312004: Measure the voltage between the trailer control unit, connector C1030, pin 4, circuit (RDNVH), wiring harness side and ground.

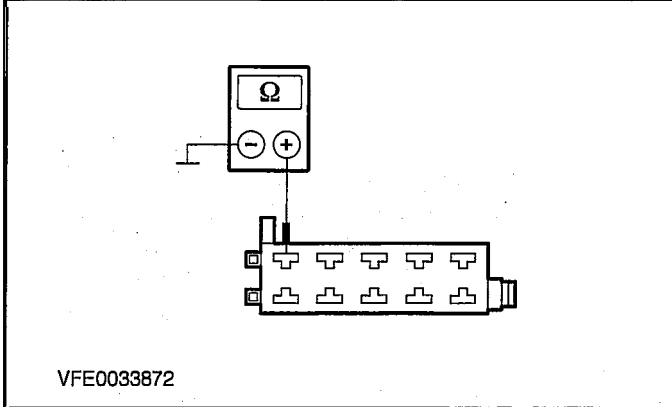
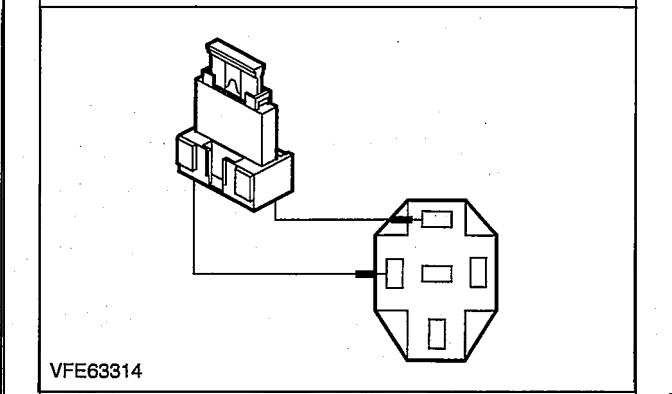


VFE0033879

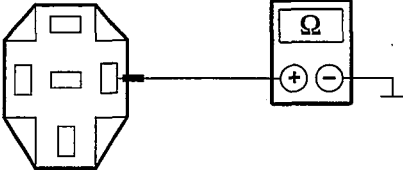
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSRESULTSIACTIONS
	<p><input type="checkbox"/> Measure the voltage between:</p> <ul style="list-style-type: none"> - Vehicles built before 1012002: Fuse F31 (20 A) (CJB) and ground. - Vehicles built from 1012002: F56 (20 A) (CJB) and ground. <p>• Is battery voltage measured?</p> <p>→ Yes GO to B19.</p> <p>→ No</p> <ul style="list-style-type: none"> - Vehicles built before 1012002: RECTIFY the break in the voltage supply to fuse F31 (20 A) (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system. - Vehicles built from 1012002: RECTIFY the break in the voltage supply of fuse F56 (20A) (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system.
B19: CHECK THE VOLTAGE SUPPLY OF THE TRAILER CONTROL UNIT	
	<p><input type="checkbox"/> 1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect trailer control unit from connector C1041.</p> <p><input type="checkbox"/> Ignition switch in position II.</p>
 <p>VFE0033871</p>	<p><input type="checkbox"/> 4 Measure the voltage between the trailer control unit, connector C1041, pin 8, circuit (RD), wiring harness side and pin 10, circuit (RD), wiring harness side and ground.</p> <p>• Is battery voltage registered following both measurements?</p> <p>→ Yes GO to B20.</p> <p>→ No</p> <ul style="list-style-type: none"> - Vehicles built before 1012002: LOCATE and RECTIFY the break in the circuit between fuse F31 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system. - Vehicles built from 1012002: LOCATE and RECTIFY the break in the circuit between fuse F56 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.

DIAGNOSIS AND TESTING

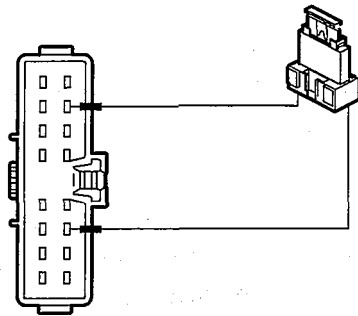
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B20: CHECK THE GROUND CONNECTION OF THE TRAILER CONTROL UNIT	
 <p>VFE0033872</p>	<div>1 Ignition switch in position 0.</div> <div>2 Measure the resistance between the trailer control unit, connector C1041, pin 1, circuit (BN), wiring harness side and ground.<ul style="list-style-type: none">Is a resistance of less than 2 ohms registered?<div>→ Yes RENEW the trailer control unit. CHECK the operation of the system.</div><div>→ No LOCATE and RECTIFY the break in the relevant circuit (BN) between the trailer control unit and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.</div></div>
B21: CHECK REAR FOG LAMP CUT-OFF RELAY	
 <p>VFE63314</p>	<div>1 Ignition switch in position 0.</div> <div>2 Connect Right-hand rear lamp assembly to connector C348a.</div> <div>3 Connect a fused jumper wire (20 A) at the rear fog lamp cut-off relay, socket C1043, between circuit (RD/WH) and circuit (VT/YE), socket side.</div>
	<div>4 Ignition switch in position II.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>5 Switch on the REAR FOG LAMP.</p> <ul style="list-style-type: none"> Does the rear fog lamp illuminate? <p>→ Yes GO to B22.</p> <p>→ No LOCATE and RECTIFY the break in circuit (VT/YE) or (WH/BK) between the rear fog lamp cut-off relay and the rear lamp assembly using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.</p>
B22: CHECK THE GROUND CONNECTION OF THE REAR FOG LAMP CUT-OFF RELAY	
 <p>E0031110</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p><input type="checkbox"/> Measure the resistance between the rear fog lamp cut-off relay, socket C1043, circuit (BN), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes RENEW the rear fog lamp cut-off relay. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> Vehicles with 7 pin trailer socket: LOCATE and RECTIFY the break in circuit (BN) or 31-LF24 (BK) between the rear fog lamp cut-off relay and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system. Vehicles with 13 pin trailer socket: LOCATE and RECTIFY the break in circuit (BN) between the rear fog lamp cut-off relay and soldered connection S1008 using the Wiring Diagrams. CHECK the operation of the system.
B23: CHECK THE HEADLIGHT SWITCH	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect headlight switch from connector C338.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



E0024111

DETAILS/RESULTS/ACTIONS

- 3 Connect a fused jumper wire (20 A) at the headlamp switch, connector C338, between pin 7, circuit 15-LD10 (GN/OG) and pin 3, circuit 15S-LD5A (GNIBU) wiring harness side.

- 4 Ignition switch in position II.

- 5 CHECK the front fog lamps.

- Do the front fog lamps illuminate?

→ **Yes**

INSTALL A NEW headlight switch. CHECK the operation of the system.

→ **No**

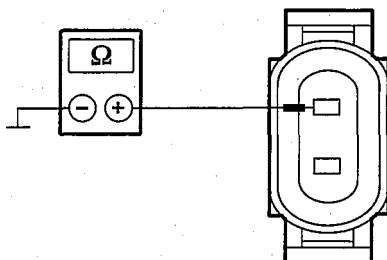
- Vehicles built before 1012004: GO to B24.
- Vehicles built from 1012004: LOCATE and RECTIFY the break in circuit 15S-LD5(A) (GN/BU) between the headlamp switch and soldered connection S38 using the Wiring Diagrams. CHECK the operation of the system.

B24: CHECK THE GROUND CONNECTION OF THE FRONT FOG LAMPS

- 1 Ignition switch in position 0.

- 2 Disconnect right-hand front fog lamp from connector C421.

- 3 Vehicles built before 0812005: Measure the resistance between right-hand front fog lamp, connector C421, pin 2, circuit 31-LD17 (BK), wiring harness side and ground.

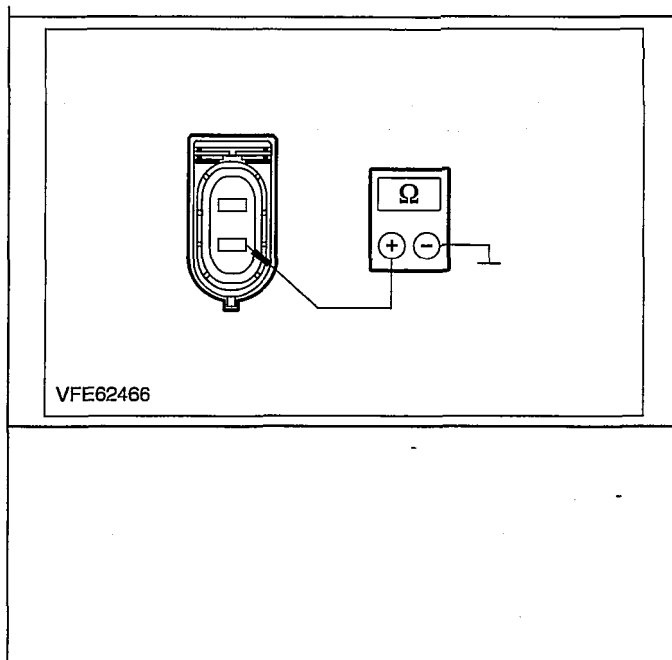


VFE0028648

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



- 4 Vehicles built from 08/2005: Measure the resistance between right-hand front fog lamp, connector C421, pin 2, circuit 31-LD17 (BK), wiring harness side and ground.

- Is a resistance of less than 2 ohms registered?

→ Yes

LOCATE and RECTIFY the break in circuit 15S-LD5A (GNIBU) or 15S-LD5 (GNIBU), between the headlight switch and soldered connection S241 using the wiring diagrams. CHECK the operation of the system.

→ No

LOCATE and RECTIFY the break in the circuit between soldered connection S242 and ground connection G4 using the wiring diagrams. CHECK the operation of the system.

PINPOINT TEST AG : INDIVIDUAL FOG LAMPS INOPERATIVE

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

C1: DETERMINE THE FAULT CONDITION

- 1 Ignition switch in position II.

- ☐ DETERMINE the fault conditions.

- ☐ SWITCH ON the fog lamps.

- Is one of the rear fog lamps inoperative?

→ Yes

- One rear fog lamp is inoperative, vehicles built before 08/2005: GO to Pinpoint Test B.
- One rear fog lamp is inoperative, vehicles without trailer socket, built from 08/2005: GO to C2.

→ No

- Left-hand front fog lamp not working: GO to C4.
- Right-hand front fog lamp not working: GO to C5.

C2: CHECK THE POWER SUPPLY TO THE REAR FOG LAMP FOR OPEN CIRCUIT

- 1 Ignition switch in position 0.

- 2 Disconnect Rear lamp assembly.

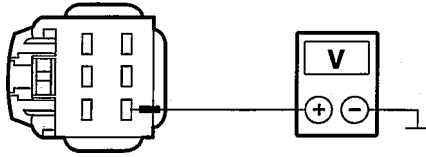
- left from connector C333
- right from connector C348

- ☐ Ignition switch in position II.

- ☐ SWITCH ON the fog lamps.

DIAGNOSIS AND TESTING

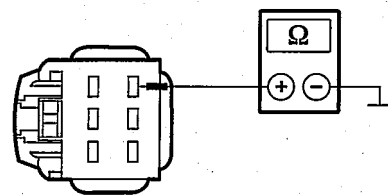
TEST CONDITIONS



VFE64395

DETAILS/RESULTS/ACTIONS

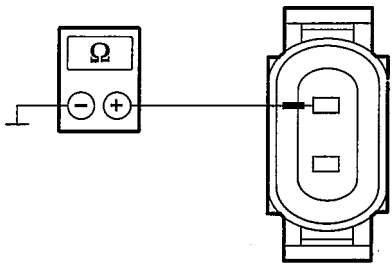
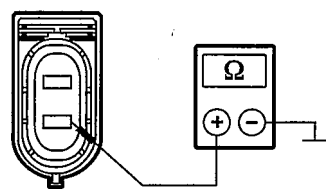
- 5 Measure the voltage between the rear lamp assembly
- left, connector C333, pin 6, circuit 15S-LD6A (GNNE), wiring harness side and ground.
 - right, connector C348, pin 6, circuit 15S-LD6B (GNNE), wiring harness side and ground.
- Is battery voltage measured?
- **Yes**
GO to C3.
- **No**
- Left-hand rear lamp assembly: LOCATE and RECTIFY the break in circuit 15S-LD6A (GNNE) between the rear lamp assembly and soldered connection S19 using the Wiring Diagrams. CHECK the operation of the system.
 - Right-hand rear lamp assembly: LOCATE and RECTIFY the break in circuit 15S-LD6B (GNNE) between the front fog lamp and soldered connection S19 using the Wiring Diagrams. CHECK the operation of the system.

C3: CHECK THE GROUND CONNECTION TO THE REAR LAMP ASSEMBLY FOR OPEN CIRCUIT

VFE64389

- 1 Ignition switch in position 0.
- 2 Measure the resistance between the rear lamp assembly
- left, connector C333, pin 4, circuit 31-LF23 (BK), wiring harness side and ground.
 - right, connector C348, pin 4, circuit 31-LF24 (BK), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
- **Yes**
CHECK and if necessary RENEW the rear lamp assembly. CHECK the operation of the system.
- **No**
- Left-hand rear lamp assembly: LOCATE and RECTIFY the break in circuit 31-LF23 (BK) between the rear fog lamp and soldered connection S24 using the Wiring Diagrams. CHECK the operation of the system.
 - Right-hand rear lamp assembly: LOCATE and RECTIFY the break in circuit 31-LF24 (BK) between the front fog lamp and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.

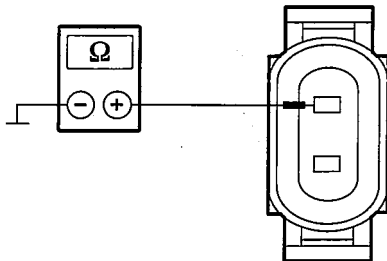
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C4: CHECK THE GROUND CONNECTION OF THE LEFT-HAND FRONT FOG LAMP	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect left-hand front fog lamp from connector C415.</p>
 <p>VFE0028648</p>	<p>3 Vehicles built before 0812005: Measure the resistance between left-hand front fog lamp, connector C415, pin 2, circuit 31-LD11 (BK), wiring harness side and ground.</p>
 <p>VFE62466</p>	<p>4 Vehicles built from 0812005: Measure the resistance between left-hand front fog lamp, connector C415, pin 2, circuit 31-LD11 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 ohms registered? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles built before 1012004: LOCATE and RECTIFY the break in circuit 15S-LD11 (GN/WH) between soldered connection S241 and the front fog lamp using the Wiring Diagrams. If necessary CHECK and INSTALL A NEW front fog lamp. CHECK the operation of the system. Vehicles built from 1012004: LOCATE and RECTIFY the break in circuit 15S-LD11 (GN/WH) between soldered connection S38 and the front fog lamp using the Wiring Diagrams. If necessary CHECK and INSTALL A NEW front fog lamp. CHECK the operation of the system. <p>→ No</p> <ul style="list-style-type: none"> Vehicles built before 1012004: LOCATE and RECTIFY the break in circuit 31-LD11 (BK) between the front fog lamp and soldered connection S242 using the Wiring Diagrams. CHECK the operation of the system. Vehicles built from 1012004: LOCATE and RECTIFY the break in circuit 31-LD11 (BK) between the front fog lamp and soldered connection S10 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

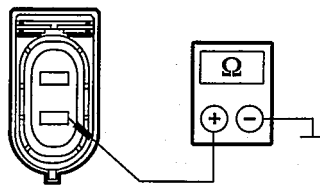
TEST CONDITIONS

DETAILS RESULTS ACTIONS

C5: CHECK THE GROUND CONNECTION OF THE RIGHT-HAND FRONT FOG LAMP

VFE0028648

- 1 Ignition switch in position 0.
- 2 Disconnect right-hand front fog lamp from connector C421.
- 3 Vehicles built before 0812005: Measure the resistance between the right-hand front fog lamp, connector C421, pin 2, circuit 31-LD17 (BK), wiring harness side and ground.



VFE62466

- ☐ Vehicles built from 0812005: Measure the resistance between the right-hand front fog lamp, connector C421, pin 2, circuit 31-LD17 (BK), wiring harness side and ground.
- Is a resistance of less than 2 ohms registered?
 - **Yes**
 - Vehicles built before 1012004: LOCATE and RECTIFY the break in circuit 15S-LD17 (GNNVH) between soldered connection S241 and the front fog lamp using the Wiring Diagrams. If necessary CHECK and INSTALL A NEW front fog lamp. CHECK the operation of the system.
 - Vehicles built from 1012004: LOCATE and RECTIFY the break in circuit 15S-LD17 (GN/WH) between soldered connection S38 and the front fog lamp using the Wiring Diagrams. If necessary CHECK and INSTALL A NEW front fog lamp. CHECK the operation of the system.
 - **No**
 - Vehicles built before 1012004: LOCATE and RECTIFY the break in circuit 31-LD17 (BK) between the front fog lamp and soldered connection S242 using the Wiring Diagrams. CHECK the operation of the system.
 - Vehicles built from 1012004: LOCATE and RECTIFY the break in circuit 31-LD17 (BK) between the front fog lamp and soldered connection S11 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

PINPOINT TEST AH : REAR FOG LAMP(S) OR FRONT FOG LAMPS ILLUMINATE CONTINUOUSLY

TEST CONDITIONS	DETAILS	RESULTS	ACTIONS
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D1: RULE OUT THE HEADLAMP SWITCH AS A CAUSE OF THE FAULT

	Ignition switch in position 0.
	<input type="checkbox"/> 2 Disconnect Headlamp switch from connector C338.
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> 4 CHECK fog lamps. <ul style="list-style-type: none"> Do the front fog lamps or the rear fog lamp(s) illuminate continuously? <p>→ Yes GO to D2.</p> <p>→ No INSTALL A NEW headlight switch. CHECK the operation of the system.</p>

D2: EXCLUDE THE INSTRUMENT CLUSTER AS THE CAUSE OF THE FAULT

	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> Disconnect Fuse F20 (7.5 A) (CJB).
	<input type="checkbox"/> 3 Disconnect Fuse F33 (7.5 A) (CJB).
	<input type="checkbox"/> 4 Disconnect Fuse F38 (7.5 A) (CJB).
	<input type="checkbox"/> 5 Disconnect Fuse F44 (3 A) (CJB).
	<input type="checkbox"/> 6 Ignition switch in position II.

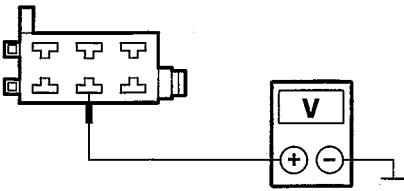
DIAGNOSIS AND TESTING**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS**

	<p>7 CHECK fog lamps.</p> <ul style="list-style-type: none"> Does/Do the rear fog lamp(s) illuminate continuously? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles without trailer socket: LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S281 using the wiring diagrams. CHECK the operation of the system. Vehicles with trailer socket, built before 0312004: GO to D3. Vehicles with trailer socket, built from 0312004 to 0812005: GO to D9. <p>→ No</p> <ul style="list-style-type: none"> Front fog lamps continuously lit: LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S280 using the Wiring Diagrams. CHECK the operation of the system. No fog lamp illuminates permanently: REFER to: <p>Instrument Cluster - Vehicles Built Up To: 10/2005 (413-01 Instrument Cluster, Diagnosis and Testing), Kombiinstrument - gebaut ab 0812005 (413-01, Diagnosis and Testing).</p>
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D3: EXCLUDE THE TRAILER CONTROL UNIT AS THE CAUSE OF THE FAULT

	<p>1 Ignition switch in position 0.</p> <p>2 Connect Fuse F20 (7.5 A) (CJB).</p> <p>3 Connect Fuse F33 (7.5 A) (CJB).</p> <p><input type="checkbox"/> Connect Fuse F38 (7.5 A) (CJB).</p> <p>5 Connect Fuse F44 (3 A) (CJB).</p> <p>6 Disconnect Fuse.</p> <ul style="list-style-type: none"> Vehicles built before 1012002: F31 (20 A) (CJB) Vehicles built from 10/2002: F56 (20 A) (CJB) <p>7 Ignition switch in position II.</p>
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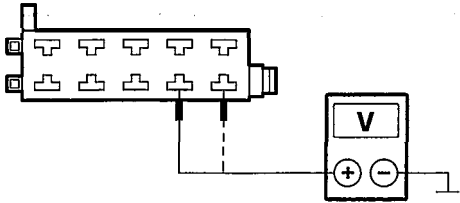
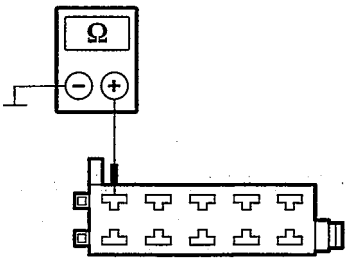
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>8 Check the rear fog lamp.</p> <ul style="list-style-type: none"> Does the rear fog lamp illuminate continuously? <p>→ Yes</p> <ul style="list-style-type: none"> - LHD: LOCATE and REPAIR the short to battery voltage in circuits (VTIYE) between the trailer control unit and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system. - RHD: LOCATE and RECTIFY the short to battery voltage in circuits (VTIYE) or (BWBU) between the trailer control unit and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system. <p>→ No GO to D4.</p>
D4: CHECK CONTROL CIRCUIT FOR SHORT TO BATTERY VOLTAGE	
 <p>VFE0033879</p>	<p>1 Measure the voltage between the trailer control unit, connector C1030, pin 4, circuit (RD/WH), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S281 using the wiring diagrams. CHECK the operation of the system.</p> <p>→ No GO to D5.</p>
D5: CHECK FUSE	
	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect Fuse.</p> <ul style="list-style-type: none"> - Vehicles built before 1012002: F31 (20 A) (CJB) - Vehicles built from 1012002: F56 (20 A) (CJB)

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>Fuse.</p> <p>Vehicles built before 1012002: F31 (20 A)</p> <p>Vehicles built from 1012002: F56 (20 A) (CJB)</p> <p>* Is the fuse OK.?</p> <p>→ Yes GO to D6.</p> <p>→ No INSTALL A NEW fuse F31 (20 A) or F56 (20 A) (CJB) and check the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground using the Wiring Diagrams. CHECK the operation of the system.</p>
D6: CHECK VOLTAGE AT FUSE	
	<p><input type="checkbox"/> Connect Fuse.</p> <ul style="list-style-type: none"> - Vehicles built before 1012002: F31 (20 A) (CJB) - Vehicles built from 1012002: F56 (20 A) (CJB) <p><input type="checkbox"/> Ignition switch in position II.</p> <p><input type="checkbox"/> Measure the voltage between:</p> <ul style="list-style-type: none"> - Vehicles built before 1012002: Fuse F31 (20 A) (CJB) and ground. - Vehicles built from 1012002: F56 (20 A) (CJB) and ground. <p>• Is battery voltage measured?</p> <p>→ Yes GO to D7.</p> <p>→ No</p> <ul style="list-style-type: none"> - Vehicles built before 1012002: RECTIFY the break in the voltage supply of fuse F31 (20A) (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system. - Vehicles built from 1012002: RECTIFY the break in the voltage supply of fuse F56 (20A) (CJB) using the Wiring Diagrams. CHECK and INSTALL A NEW CJB if necessary. CHECK the operation of the system.
D7: CHECK THE VOLTAGE SUPPLY OF THE TRAILER CONTROL UNIT	
	<p><input checked="" type="checkbox"/> Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect trailer control unit from connector C1041.</p> <p><input type="checkbox"/> Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033871</p>	<p>4 Measure the voltage between the trailer control unit, connector C1041, pin 8, circuit (RD), wiring harness side and pin 10, circuit (RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage registered following both measurements? <p>→ Yes GO to D8.</p> <p>→ No</p> <ul style="list-style-type: none"> Vehicles built before 1012002: LOCATE and RECTIFY the break in the circuit between fuse F31 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system. Vehicles built from 1012002: LOCATE and RECTIFY the break in the circuit between fuse F56 (20 A) (CJB) and the trailer control unit using the Wiring Diagrams. CHECK and INSTALL A NEW rear lamp assembly if necessary. CHECK the operation of the system.
D8: CHECK THE GROUND CONNECTION OF THE TRAILER CONTROL UNIT	
 <p>VFE0033872</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the trailer control unit, connector C1041, pin 1, circuit (BN), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is less than 2 Ohm measured? <p>→ Yes RENEW the trailer control unit. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the relevant circuit (BN) between the trailer control unit and ground connection G18 using the Wiring Diagrams. CHECK the operation of the system.</p>
D9: EXCLUDE THE LOAD CURRENT CIRCUIT AS THE CAUSE OF THE FAULT	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Rear fog lamp cut-off relay from socket C1043.</p> <p>3 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS**☐ Check the rear fog lamp.

- Does the rear fog lamp illuminate continuously?

→ Yes

- LHD: LOCATE and REPAIR the short to battery voltage in circuits (VT/YE) between the rear fog lamp cut-off relay and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.
- RHD: LOCATE and REPAIR the short to battery voltage in circuits (VT/YE) or (WH/BK) between the rear fog lamp cut-off relay and the rear lamp assembly using the Wiring Diagrams. CHECK the operation of the system.

→ No

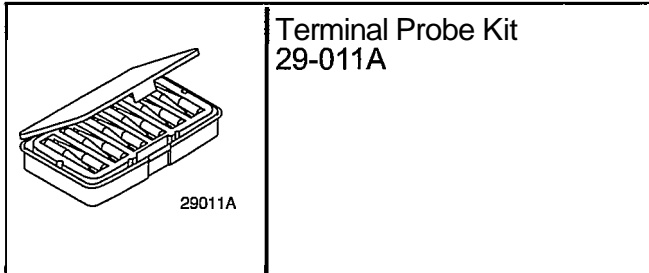
LOCATE and RECTIFY the short to battery voltage in the circuits connected to soldered connection S281 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

Headlamp Leveling

Refer to Wiring Diagrams Section 417-01, for schematic and connector information.

Special Tool(s)



Terminal Probe Kit
29-011A

Inspection and Checking

1. Verify the customer concern.

2. Visually inspect for obvious signs of electrical damage.

Visual Inspection

Electrical
<ul style="list-style-type: none"> • Fuse(~) • Connector(s) • Switches • Wiring harness

3. Resolve any obvious causes or concerns found during the visual inspection before carrying out any further tests.

4. If the concern is not visually evident, refer to the Symptom Chart.

Symptom Chart

Symptom Chart

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> • Headlamp leveling system is inoperative/malfunctioning 	<ul style="list-style-type: none"> • Circuit(s) • Headlight switch • Left/right-hand headlamp 	<ul style="list-style-type: none"> • GO to Pinpoint Test A.

System Checks

NOTE: Use a digital multimeter for all electrical measurements.

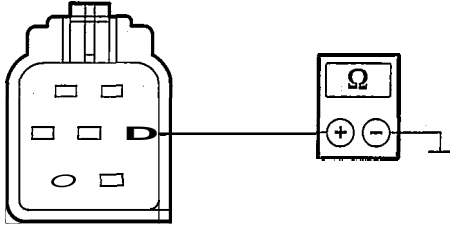
PINPOINT TEST AI : HEADLAMP LEVELING SYSTEM IS INOPERATIVE/MALFUNCTIONING

TEST CONDITIONS

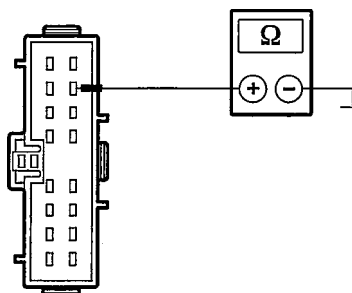
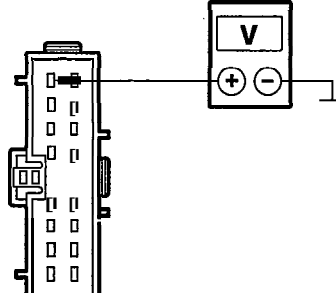
DETAILS/RESULTS/ACTIONS

AI: DETERMINE THE FAULT CONDITION	
	<ol style="list-style-type: none"> 1 Determine the fault condition. <ul style="list-style-type: none"> • Is the headlamp leveling system inoperative for both headlamps? <p>→ Yes</p> <ul style="list-style-type: none"> - Inoperative: GO to A3. - Malfunctioning: GO to A2. <p>→ No</p> <ul style="list-style-type: none"> - Left-hand side inoperative: GO to A12. - Right-hand side inoperative: GO to A14. - Left or right-hand side malfunctioning: CHECK headlamp range adjustment unit and if necessary INSTALL A NEW headlamp. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A2: CHECK THE HEADLAMP ADJUST VARIABLE RESISTOR	
NOTE: Switch off the lights.	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect left-hand headlamp from connector C416 . 3 CHANGE the SETTING of the headlamp leveling system during the measurement (UP/DOWN).
 <p>VFE0030133</p>	<ol style="list-style-type: none"> 4 Measure the resistance between left-hand headlamp, connector C416, pin 5, circuit 64S-LE45 (BU), wiring harness side and ground. <ul style="list-style-type: none"> • Does the registered resistance vary with change to the variable resistor? → Yes GO to A3. → No INSTALL A NEW headlight switch. CHECK the operation of the system.
A3: CHECK THE VOLTAGE SUPPLY OF THE HEADLIGHT SWITCH	
	<ol style="list-style-type: none"> 1 Ignition switch in position II. 2 Operate the headlamp flasher and check that it works correctly. <ul style="list-style-type: none"> • Is the headlamp flasher operating correctly? → Yes GO to A4. → No RECTIFY the break in the voltage supply of the headlight switch using the wiring diagrams. CHECK the operation of the system. REFER to: Headlamps (417-01 Exterior Lighting, Diagnosis and Testing).
A4: CHECK THE GROUND CONNECTION OF THE HEADLIGHT SWITCH	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect headlight switch from connector C338 .

DIAGNOSIS AND TESTING

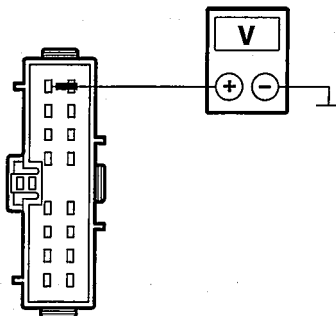
TEST CONDITIONS	DETAILSRESULTSACTIONS
 <p>VFE0033915</p>	<input type="checkbox"/> Measure the resistance between the headlight switch, connector C338, pin 10, circuit 31-LE29 (BK), wiring harness side and ground. <ul style="list-style-type: none"> Is the resistance less than 2 Ohm? <p>→ Yes GO to A5.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the headlight switch and soldered connection S263 using the wiring diagrams. CHECK the operation of the system.</p>
A5: CHECK THE HEADLIGHT SWITCH	
	<input type="checkbox"/> Check the headlight switch (variable resistor, headlamp leveling system) according to the component checks in the wiring diagrams. <ul style="list-style-type: none"> Check headlight switch connector C338 at pins 1, 8 and 10. Is the headlight switch OK? <p>→ Yes GO to A6.</p> <p>→ No INSTALL A NEW headlight switch. CHECK the operation of the system.</p>
A6: CHECK CONTROL CIRCUIT OF HEADLAMP LEVELLING SYSTEM FOR SHORT TO BATTERY VOLTAGE	
NOTE: Keep the testing rig for use during further voltage measurements.	
	<input checked="" type="checkbox"/> 1 Ignition switch in position 0. <input type="checkbox"/> Connect left-hand headlamp to connector C416 <input type="checkbox"/> Ignition switch in position II.
 <p>VFE0033916</p>	<input checked="" type="checkbox"/> 4 Measure the voltage between the headlight switch, connector C338, pin 1, circuit 64S-LE5 (BU/RD), wiring harness side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A7.</p> <p>→ No GO to A9.</p>

DIAGNOSIS AND TESTING

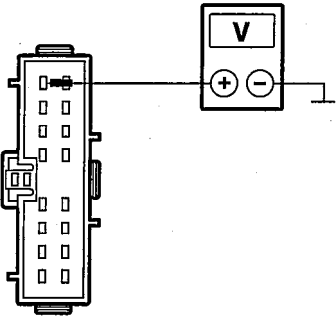
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

A7: CHECK LEFT-HAND HEADLAMP ASSEMBLY FOR SHORT TO BATTERY VOLTAGE

	<ol style="list-style-type: none">1 Ignition switch in position 0.
 <p>VFE0033916</p>	<ol style="list-style-type: none">2 Disconnect left-hand headlamp from connector C416 . <ol style="list-style-type: none">3 Ignition switch in position II. <ol style="list-style-type: none">4 Measure the voltage between the headlight switch, connector C338, pin 1, circuit 64S-LE5 (BUIRD), wiring harness side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A8.</p> <p>→ No CHECK and if necessary INSTALL A NEW left-hand headlamp. CHECK the operation of the system.</p>

A8: CHECK RIGHT-HAND HEADLAMP ASSEMBLY FOR SHORT TO BATTERY VOLTAGE

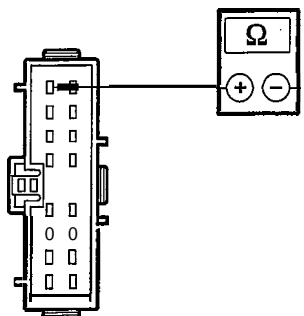
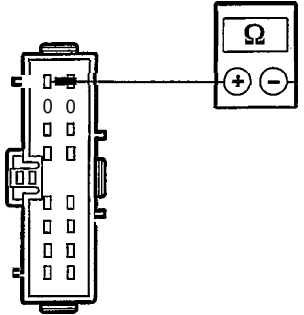
	<ol style="list-style-type: none">1 Ignition switch in position 0.
 <p>VFE0033916</p>	<ol style="list-style-type: none">2 Disconnect right-hand headlamp from connector C422 . <ol style="list-style-type: none">3 Ignition switch in position II. <ol style="list-style-type: none">4 Measure the voltage between the headlight switch, connector C338, pin 1, circuit 64S-LE5 (BU/RD), wiring harness side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes LOCATE and RECTIFY short to battery voltage in circuit(s) 64S-LE5 (BUIRD), 64S-LE45 (BU) or 64S-LE46 (BUIRD), between the headlight switch and the left-hand or right-hand headlamp using the wiring diagrams. CHECK the operation of the system.</p> <p>→ No CHECK and if necessary INSTALL A NEW right-hand headlamp. CHECK the operation of the system.</p>

A9: CHECK CONTROL CIRCUIT OF HEADLAMP LEVELLING SYSTEM FOR SHORT TO GROUND

NOTE: Keep the testing rig for use during further resistance measurements.

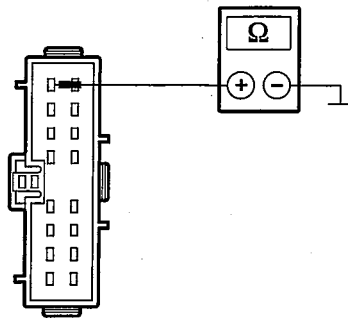
	<ol style="list-style-type: none">1 Ignition switch in position 0.
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DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0033917</p>	<p>Measure the resistance between the headlight switch, connector C338, pin 1, circuit 64S-LE5 (BUIRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance greater than 10,000 Ohms? <p>→ Yes LOCATE and RECTIFY short to ground in circuit(s) 64S-LE5 (BUIRD), 64S-LE45 (BU) or 64S-LE46 (BU/RD), between the headlight switch and the left-hand or right-hand headlamp using the wiring diagrams. CHECK the operation of the system.</p> <p>→ No GO to A10.</p>
A10: CHECK LEFT-HAND HEADLAMP ASSEMBLY FOR SHORT TO GROUND	
 <p>VFE0033917</p>	<p>Disconnect left-hand headlamp from connector C416 .</p> <p>2 Measure the resistance between the headlight switch, connector C338, pin 1, circuit 64S-LE5 (BU/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance greater than 10,000 Ohms? <p>→ Yes CHECK and if necessary INSTALL A NEW left-hand headlamp. CHECK the operation of the system.</p> <p>→ No GO to A11.</p>
A11: CHECK RIGHT-HAND HEADLAMP ASSEMBLY FOR SHORT TO GROUND	
	<p>Disconnect right-hand headlamp from connector C422 .</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0033917

DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the headlight switch, connector C338, pin 1, circuit 64S-LE5 (BUIRD), wiring harness side and ground.

• Is the resistance greater than 10,000 Ohms?

→ **Yes**

CHECK and if necessary INSTALL A NEW right-hand headlamp. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY short to ground in circuit(s) 64S-LE5 (BUIRD), 64S-LE45 (BU) or 64S-LE46 (BUIRD), between the headlight switch and the left-hand or right-hand headlamp using the wiring diagrams. CHECK the operation of the system.

A12: CHECK CONTROL VOLTAGE AT THE LEFT-HAND HEADLAMP

- 1 Ignition switch in position 0.

- 2 Disconnect left-hand headlamp from connector C416 .

- 3 Ignition switch in position II.

- 4 SWITCH ON dipped beam.

- 5 CHANGE the SETTING of the headlamp leveling system during the measurement (UP/DOWN).

- 6 Measure the voltage between left-hand headlamp, connector C416, pin 5, circuit 64S-LE45 (BU), wiring harness side and ground.

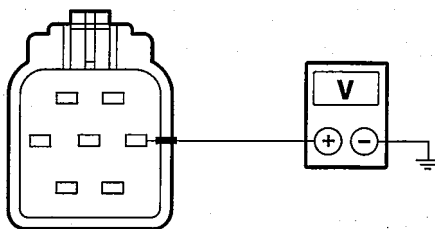
• Does the voltage measured change in accordance with the position set?

→ **Yes**

GO to A13.

→ **No**

LOCATE and RECTIFY the break in the circuit between the headlamp and intermediate connector C810 using the wiring diagrams. CHECK the operation of the system.



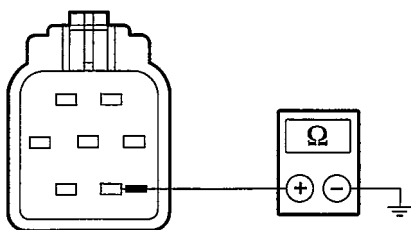
VFE0005897

A13: CHECK GROUND CONNECTION OF THE LEFT-HAND HEADLAMP

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E0011503

DETAILS/RESULTS/ACTIONS

Measure the resistance between left-hand headlamp, connector C416, pin 7, circuit 31-LE45 (BK), wiring harness side and ground.

- Is less than 2 Ohm measured?

→ **Yes**

CHECK and if necessary INSTALL A NEW headlamp and adjustment unit. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the headlamp and soldered connection S10 using the wiring diagrams. CHECK the operation of the system.

A14: CHECK VOLTAGE AT THE RIGHT-HAND HEADLAMP

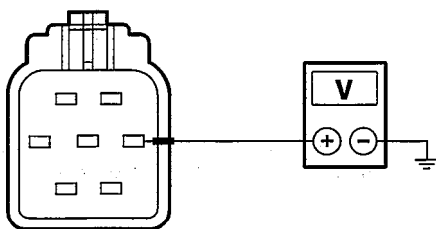
1 Ignition switch in position 0.

2 Disconnect right-hand headlamp from connector C422 .

3 Ignition switch in position II.

4 SWITCH ON dipped beam.

5 CHANGE the SETTING of the headlamp leveling system during the measurement (UP/DOWN).



VFE0005897

6 Measure the voltage between right-hand headlamp, connector C422, pin 5, circuit 64S-LE46 (BU/RD), wiring harness side and ground.

- Does the voltage measured change in accordance with the position set?

→ **Yes**

GO to A15.

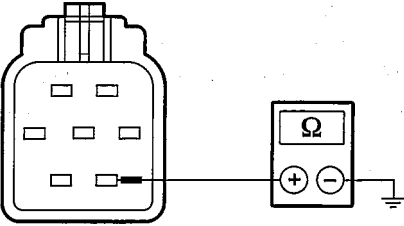
→ **No**

LOCATE and RECTIFY the break in the circuit between the headlamp and intermediate connector C810 using the wiring diagrams. CHECK the operation of the system.

A15: CHECK GROUND CONNECTION OF THE RIGHT-HAND HEADLAMP

1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<div></div> <div>E0011503</div>	<div><input type="checkbox"/> Measure the resistance between right-hand headlamp, connector C422, pin 7, circuit 31-LE46 (BK), wiring harness side and ground.</div> <div><ul style="list-style-type: none">• Is less than 2 Ohm measured?</div> <div><div>→ Yes</div><div>CHECK and if necessary INSTALL A NEW headlamp and adjustment unit. CHECK the operation of the system.</div></div> <div><div>→ No</div><div>LOCATE and RECTIFY the break in the circuit between the headlamp and soldered connection S11 using the wiring diagrams. CHECK the operation of the system.</div></div>

GENERAL PROCEDURES

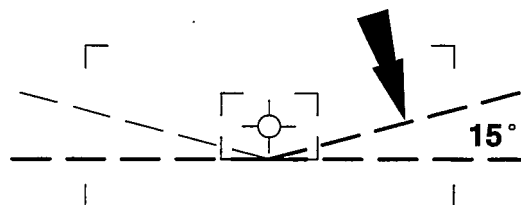
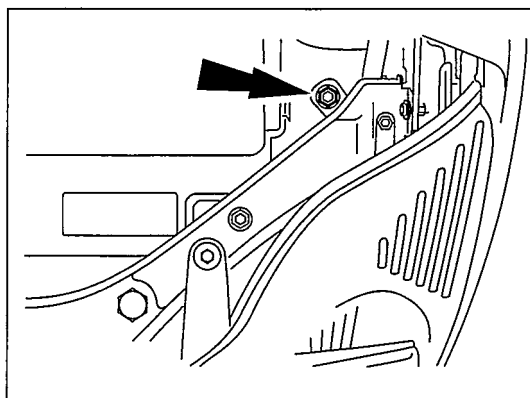
Headlamp Adjustment(32 113 0)

General Equipment

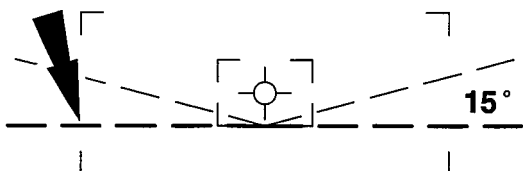
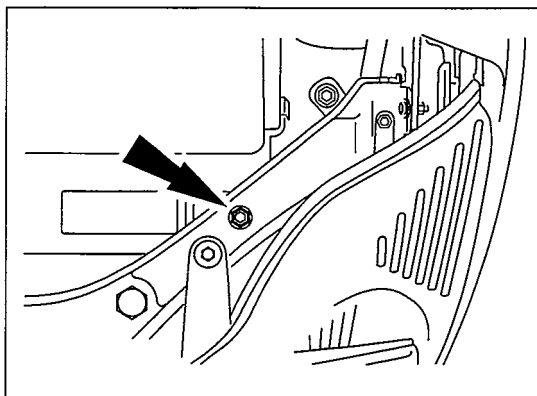
Beam setting equipment

1. Place the vehicle on a level surface.
2. Check that the tyre pressures meet the specifications and that the vehicle is not excessively laden.
3. Switch on the dipped beam.
4. Repeatedly operate the **headlamp** levelling switch and then set it to "0".
5. Set up the measuring screen of the beam setting device to the correct **headlamp** setting value.
6. Adjust the dipped beam so that the light/dark boundary touches the horizontal line.

Adjust the dipped beam so that the rising line of the **light/dark** boundary lies in the intersection point of the horizontal line and the 15° line (LHD variant shown).



VFE0030364



VFE0030363

7. **NOTE:** A diffused part of the dipped beam may lie above the 15° line.

GENERAL PROCEDURES

Headlamp Masking — Vehicles Built Up To: 1012005

All vehicles

NOTE: The templates are different for LHD and RHD vehicles. The templates are different for the left and right-hand headlamps.

1. Print out the corresponding templates at the end of this operation.

2. Measure dimension **X** on the printout of the template.

3. Calculate the enlargement/reduction factor **Y** for the photocopier using the following formula: $Y = Z \div X \times 100$.

- X = measurement on the printout of the template in mm
- Y = enlargement/reduction factor in %
- Z = original dimension in mm = 25

4. **Enlarge/reduce** the printout with a photocopier by the calculated percentage.

- Compare dimension X on the photocopy with the original dimension.

5. Cut out the prepared template for the headlamp.

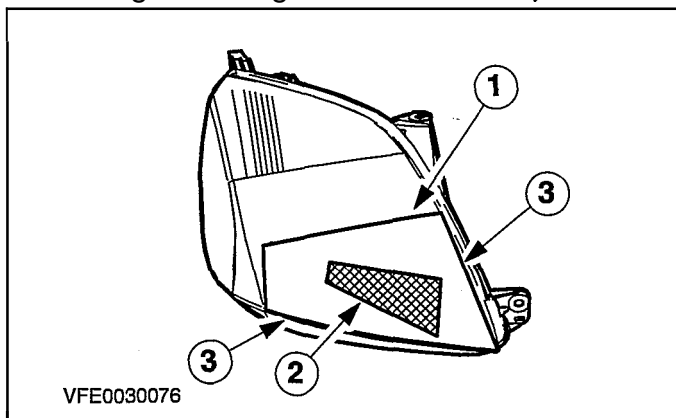
6. Cut out the shaded areas.

LHD vehicles

7. **NOTE: Right-hand headlamp only.**

Align the template on the lens of the headlamp.

1. Template
2. Area to be masked
3. Alignment edges on the headlamp lens



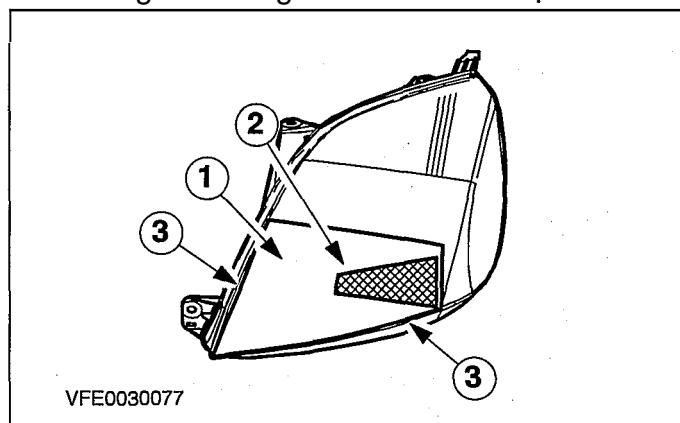
8. **NOTE: Left-hand headlamp only.**

Align the template on the lens of the headlamp.

1. Template

2. Area to be masked

3. Alignment edges on the headlamp lens

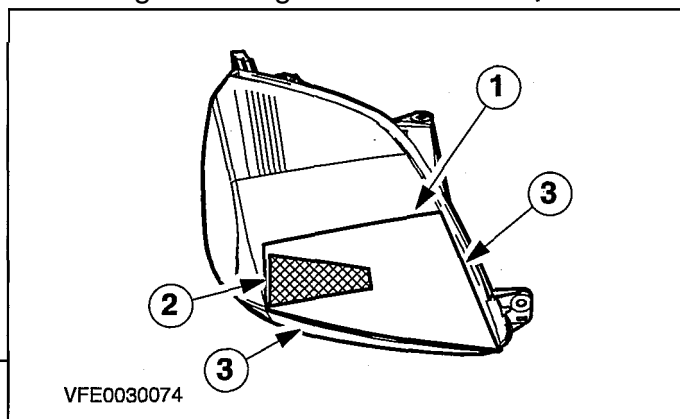


RHD vehicles

9. **NOTE: Right-hand headlamp only.**

Align the template on the lens of the headlamp.

1. Template
2. Area to be masked
3. Alignment edges on the headlamp lens



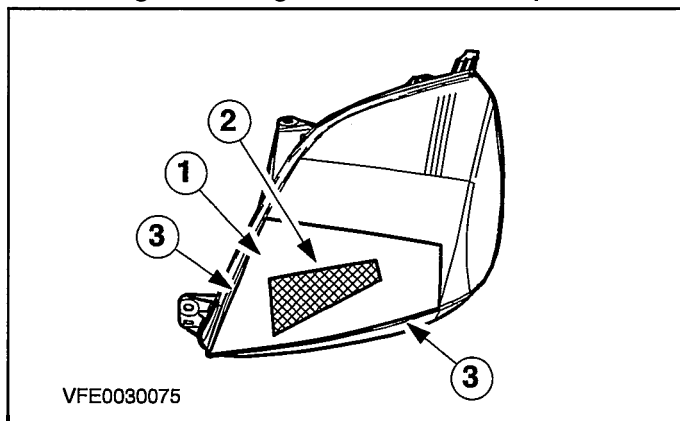
10. **NOTE: Left-hand headlamp only.**

Align the template on the lens of the headlamp.

1. Template
2. Area to be masked

GENERAL PROCEDURES

3. Alignment edges on the headlamp lens



All vehicles

11. **CAUTION:** Do not damage the surface of the headlamp.

Copy the outline of the template with a suitable pen onto the **headlamp** lens.

12. Remove the template.

13. **NOTE:** Make sure that the marked area is not exceeded.

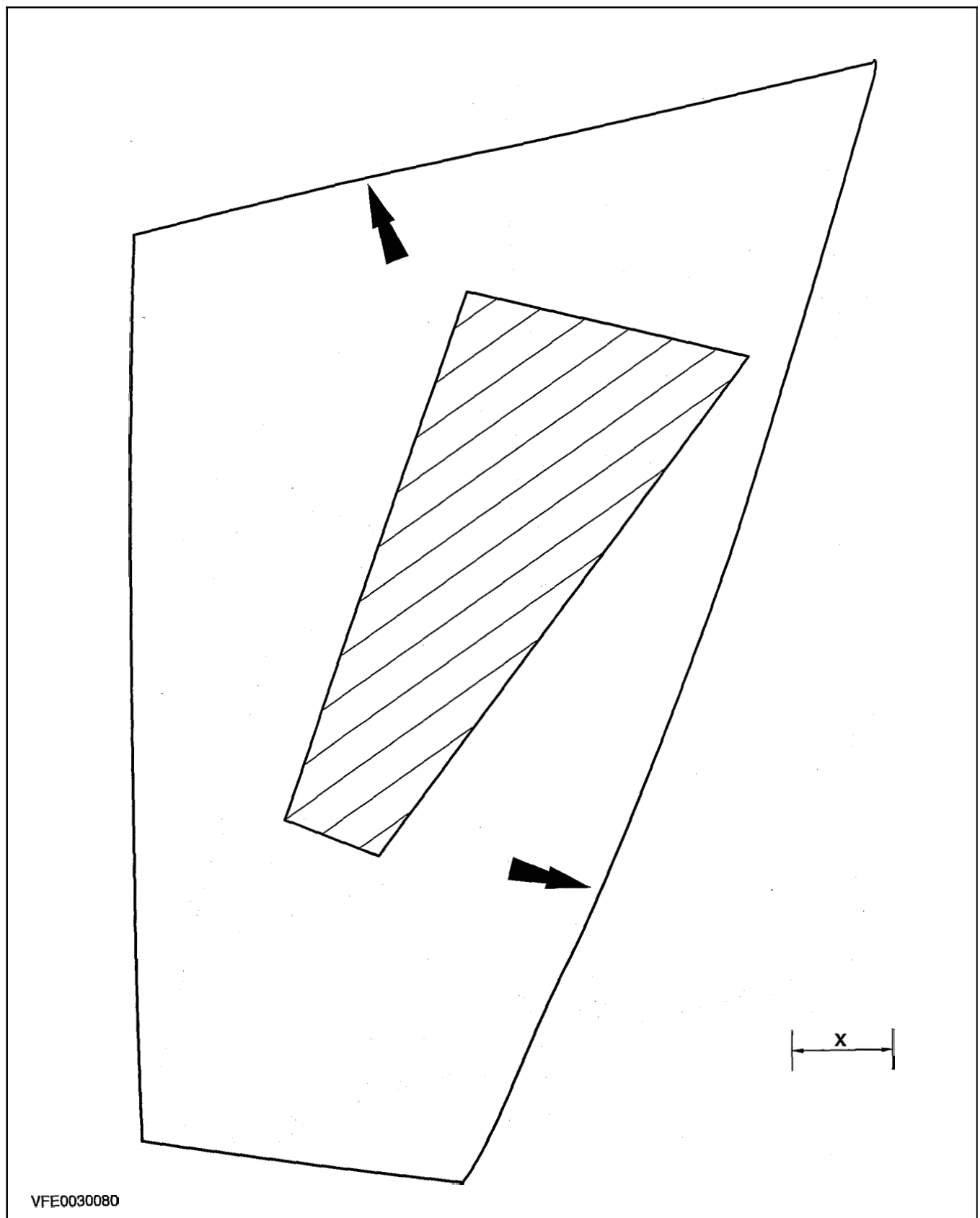
Mask the marked area with opaque black adhesive tape.

14. Repeat steps 11 to 13 for the **headlamp** on the other side.

15. Template for LHD vehicles, right-hand **headlamp**

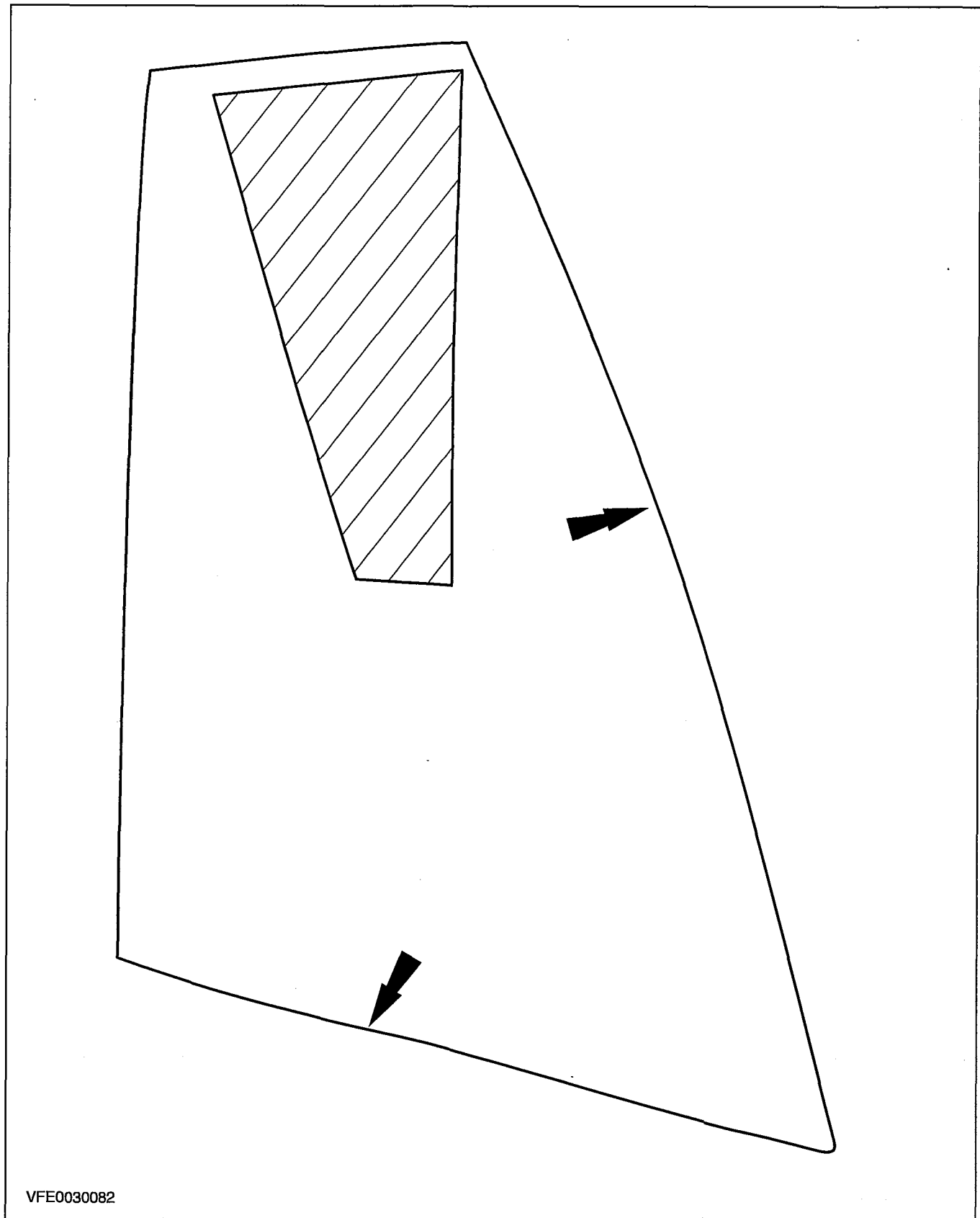
- Alignment edges

GENERAL PROCEDURES



16. Template for LHD vehicles, left-hand headlamp

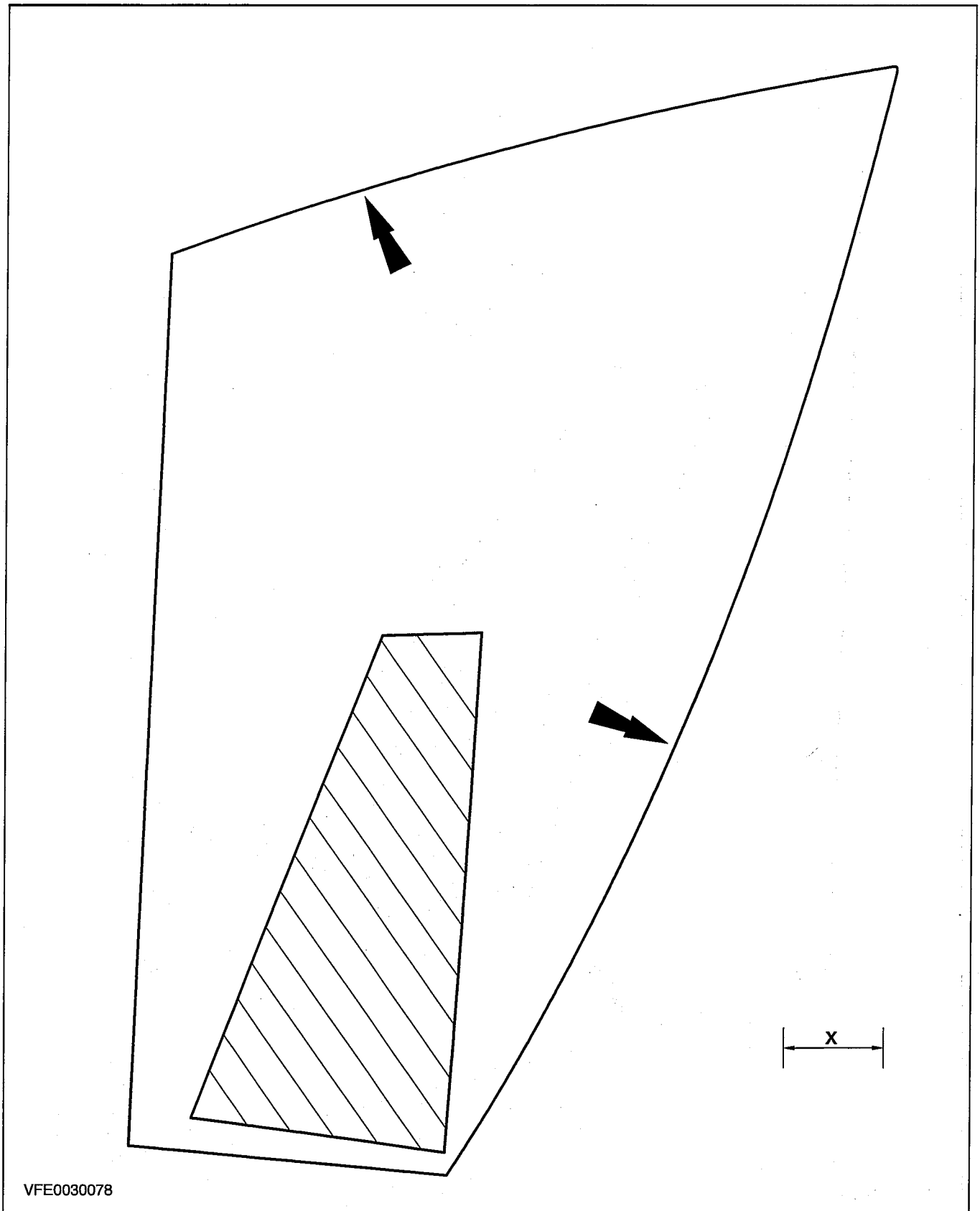
- Alignment edges

GENERAL PROCEDURES

17. Template for RHD vehicles, right-hand headlamp

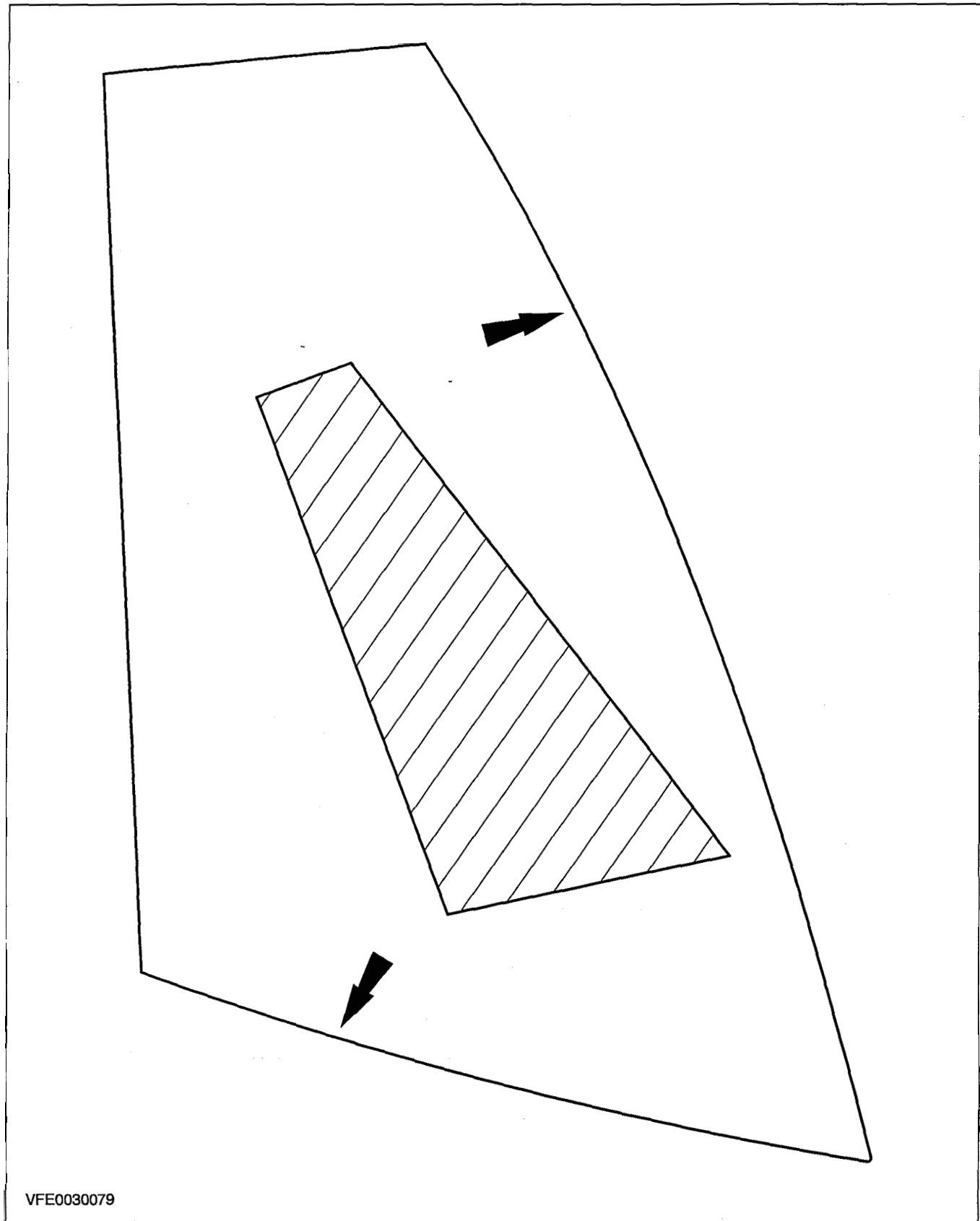
- Alignment edges

GENERAL PROCEDURES



18. Template for RHD vehicles, left-hand headlamp

- Alignment edges

GENERAL PROCEDURES

GENERAL PROCEDURES

Headlamp Masking — Vehicles Built From: 10/2005

All vehicles

NOTE: The templates are different for LHD and RHD vehicles. The templates are different for the left and right-hand headlamps.

■ **Print out the corresponding templates at the end of this operation.**

2. Measure dimension X on the printout of the template.

3. Calculate the **enlargement/reduction** factor Y for the photocopier using the following formula: **$Y = Z \div X \times 100$** .

- X = measurement on the printout of the template in mm
- Y = enlargement/reduction factor in %
- Z = original dimension in mm = 100

4. **Enlarge/reduce** the printout with a photocopier by the calculated percentage.

- Compare dimension X on the photocopy with the original dimension.

5. Cut out the prepared templates for the headlamps.

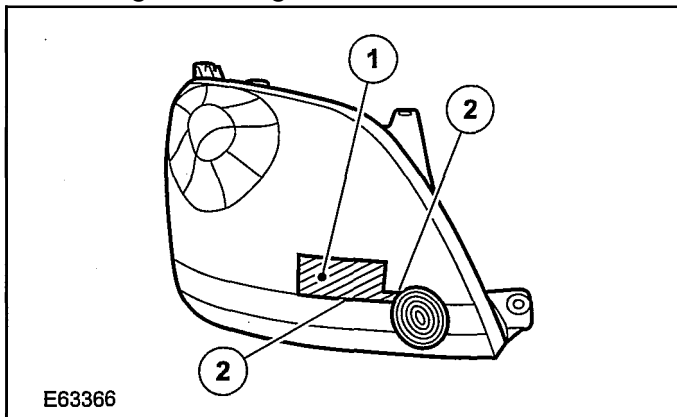
Left-hand drive vehicles

6. **NOTE: Right-hand headlamp only.**

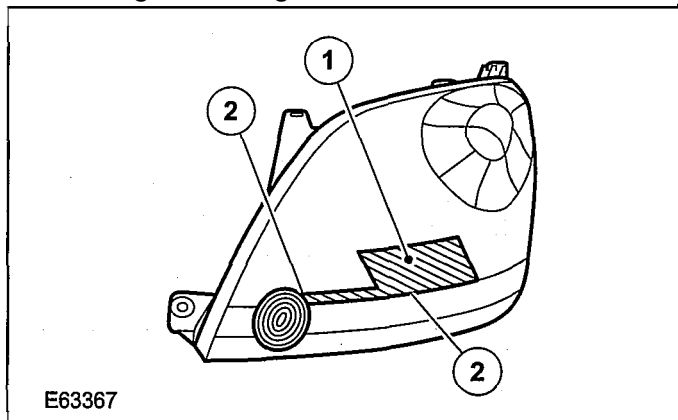
Align the template on the lens of the headlamp.

■ **Template**

2. Alignment edges on the headlamp lens



2. Alignment edges on the headlamp lens



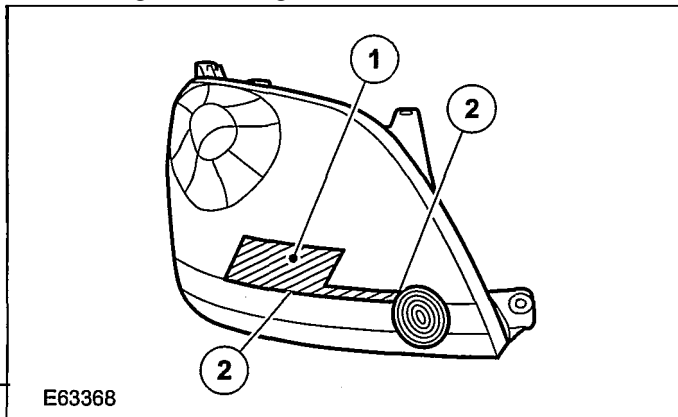
RHD vehicles

8. **NOTE: Right-hand headlamp only.**

Align the template on the lens of the headlamp.

1. Template

2. Alignment edges on the headlamp lens



9. **NOTE: Left-hand headlamp only.**

Align the template on the lens of the headlamp.

1. Template

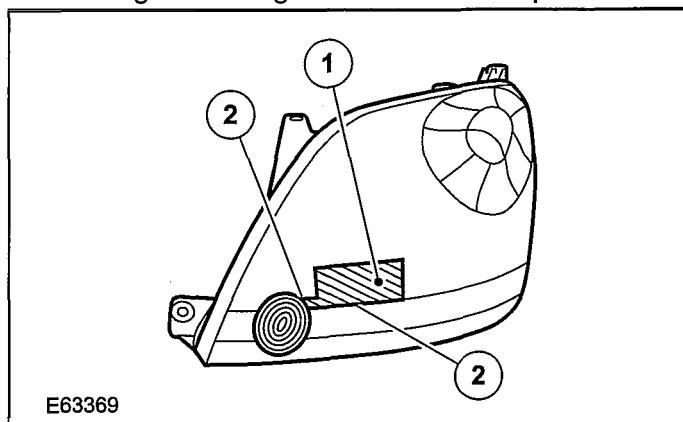
7. **NOTE: Left-hand headlamp only.**

Align the template on the lens of the headlamp.

■ **Template**

GENERALPROCEDURES

2. Alignment edges on the headlamp lens



Copy the outline of the template with a suitable pen onto the **headlamp** lens.

11. Remove the template.

12. **NOTE:** Make sure not to go past the marked area.

Mask the marked area with opaque black adhesive tape.

13. Repeat steps **10** to **12** for the **headlamp** on the other side.

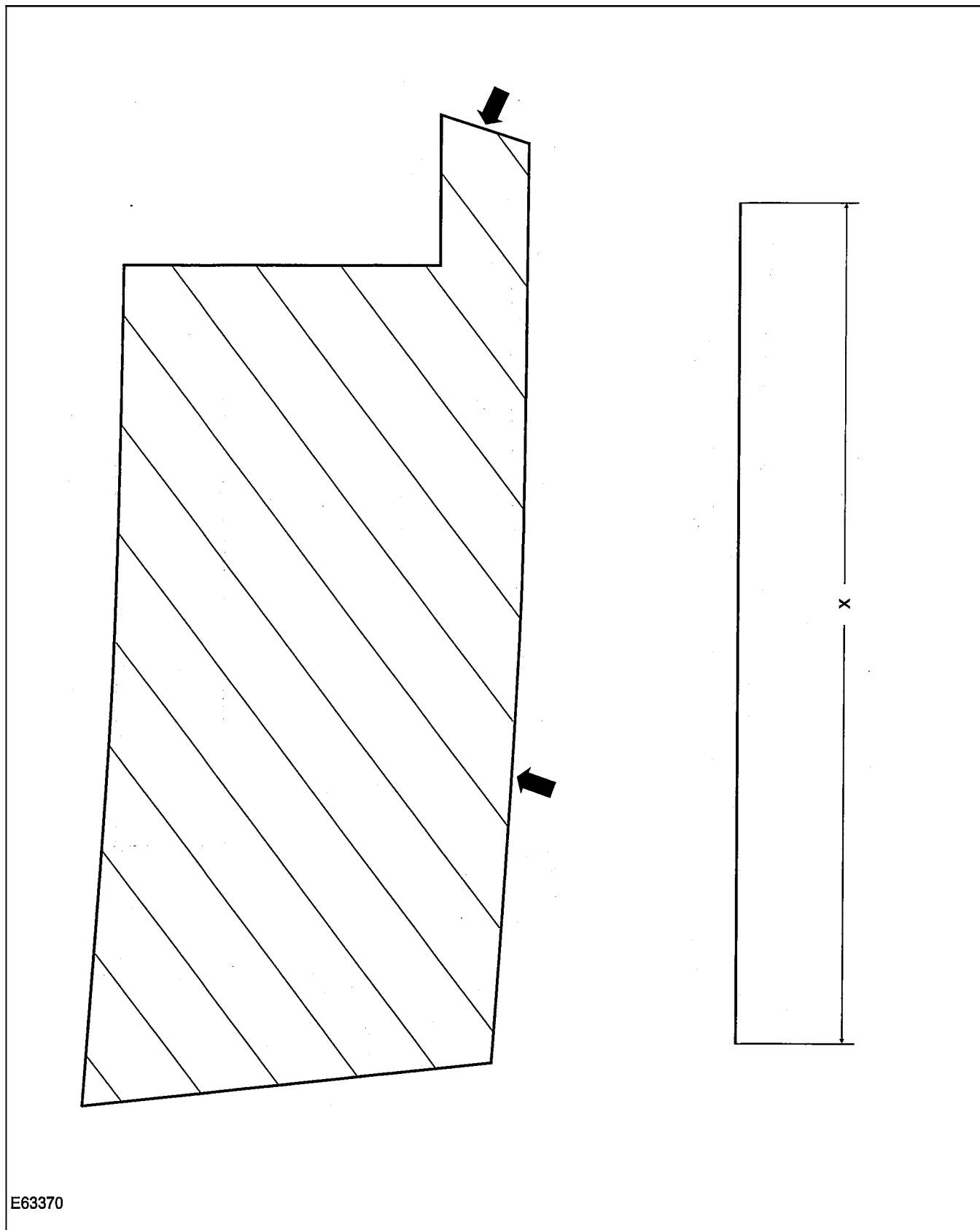
14. Template for LHD vehicles, right-hand **headlamp**

- Alignment edges

All vehicles

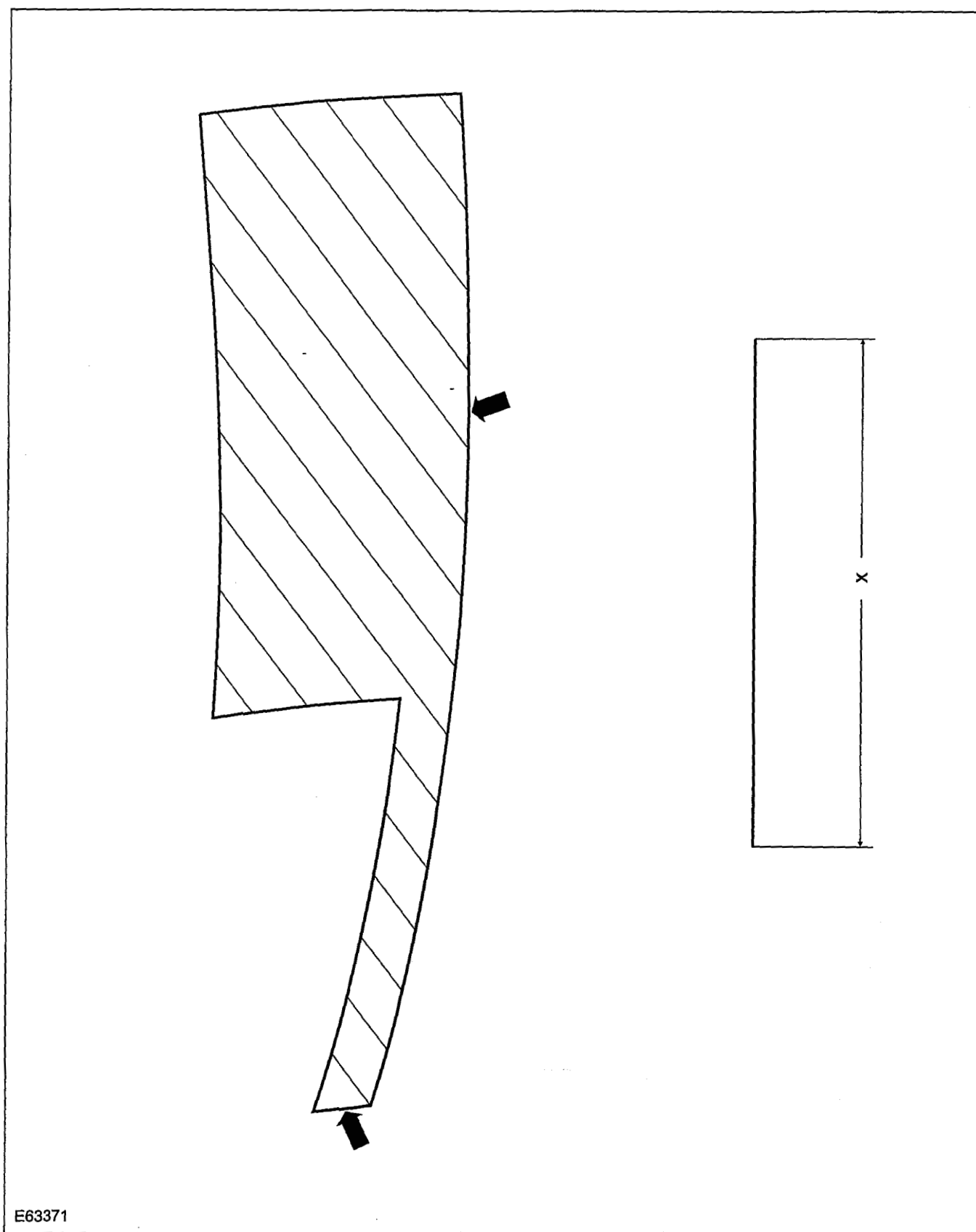
10. **CAUTION:** Do not damage the **headlamp** surface.

GENERAL PROCEDURES



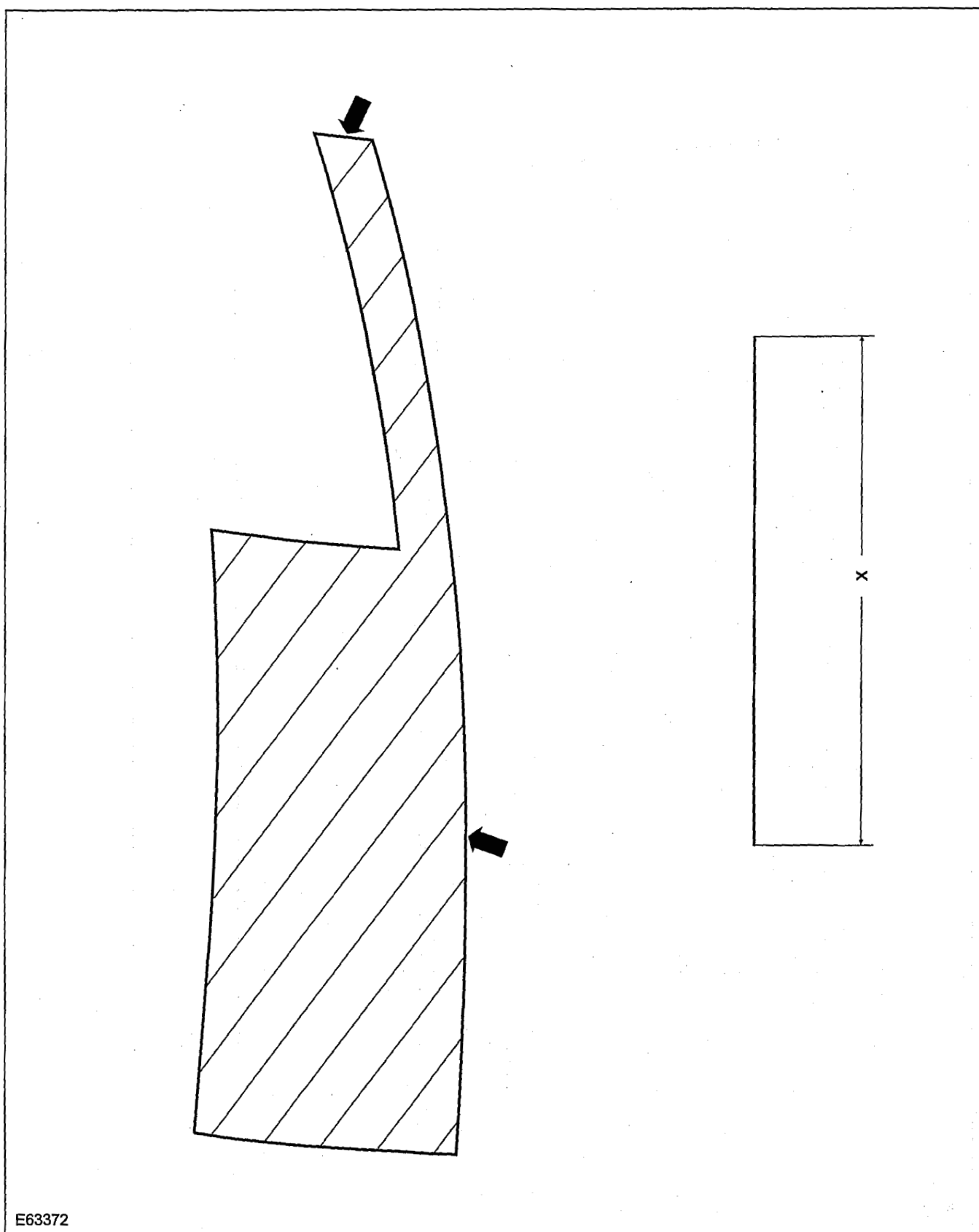
15. Template for LHD vehicles, left-hand headlamp

- Alignment edges

GENERAL PROCEDURES**16. Template for RHD vehicles, right-hand headlamp**

- Alignment edges

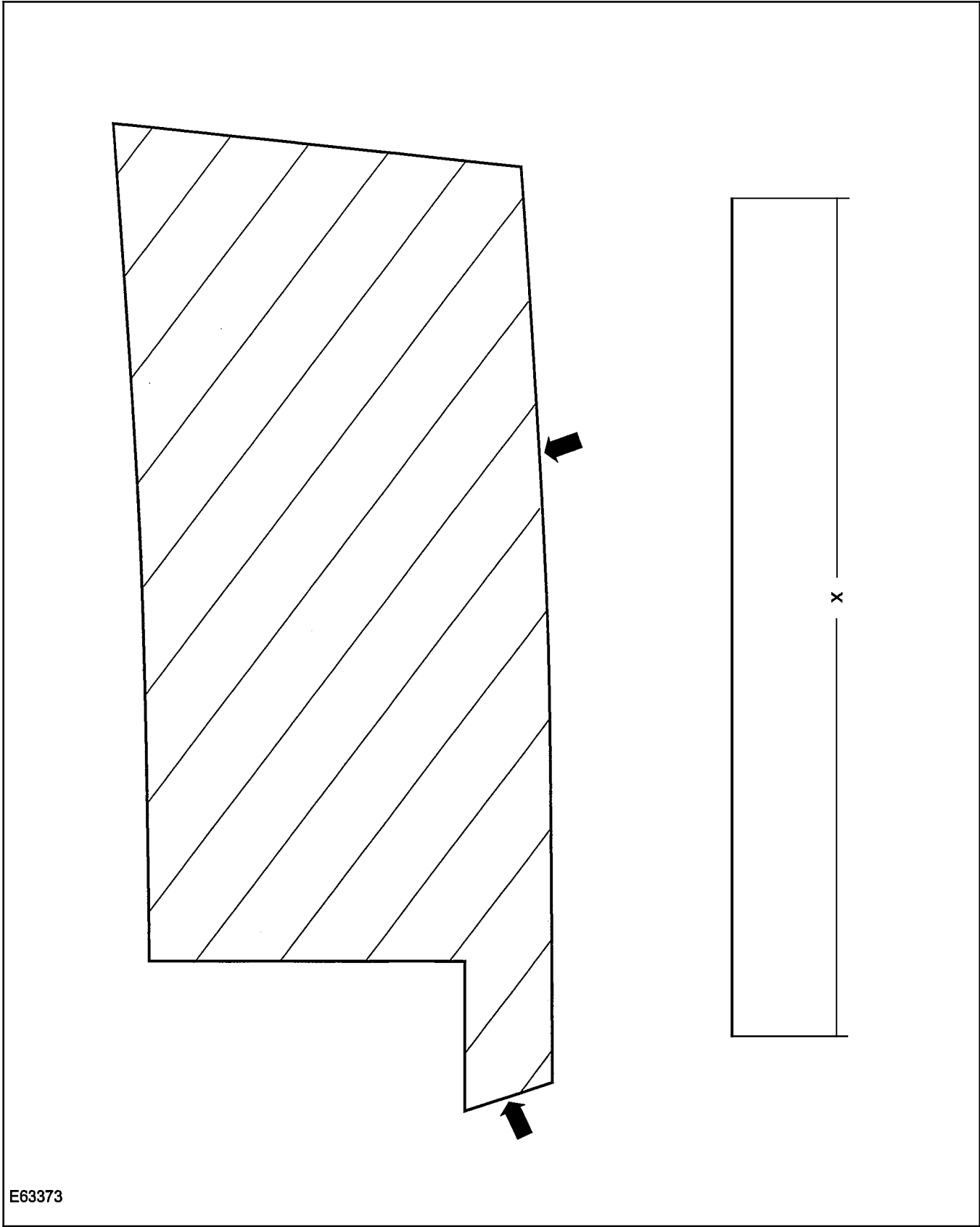
GENERAL PROCEDURES



17. Template for RHD vehicles, left-hand headlamp

- Alignment edges

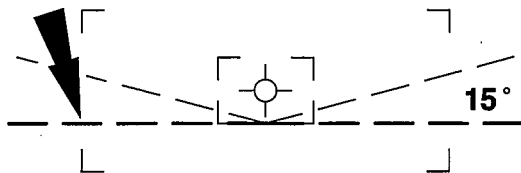
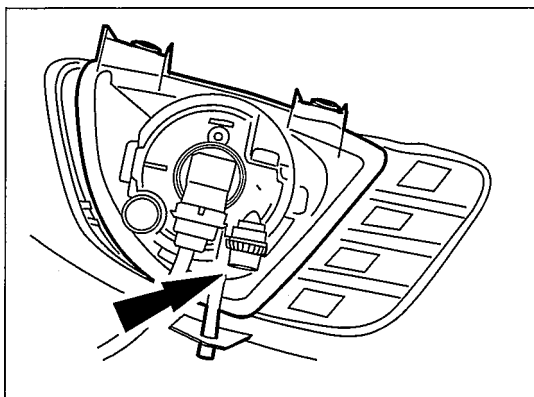
GENERAL PROCEDURES



GENERALPROCEDURES**Front Fog Lamp Adjustment****General Equipment**

Beam setting equipment

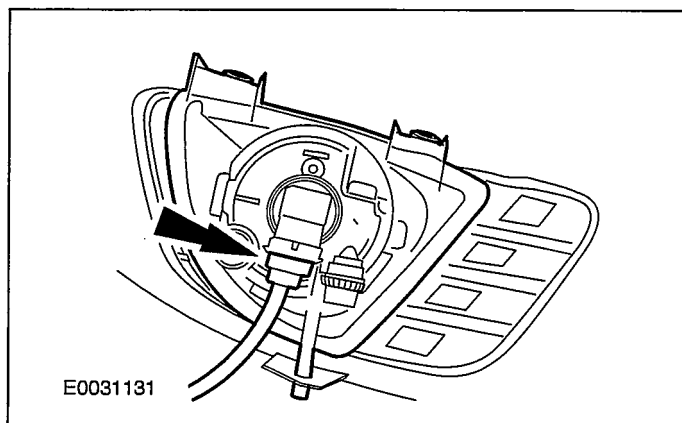
- Place the vehicle on a level surface.
2. Check that the tyre pressures meet the specifications and that the vehicle is not excessively laden.
3. Switch on the front fog lamps.
4. Set up the measuring screen of the beam setting device to the correct setting value for the front fog lamps.
5. Adjust the front fog lamps so that the **light/dark** boundary touches the horizontal line.



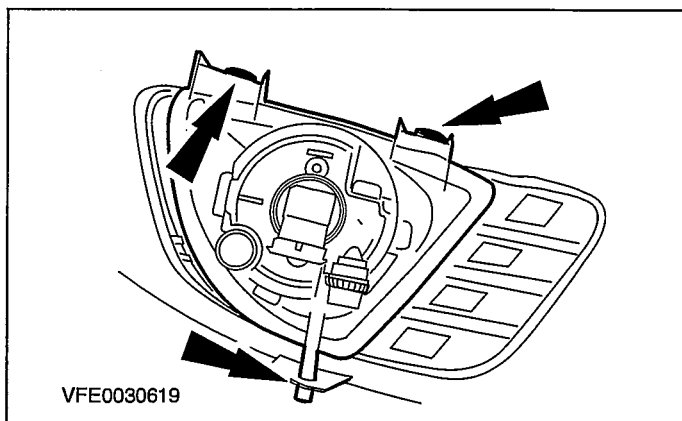
VFE0026810

REMOVAL AND INSTALLATION**Front Fog Lamp — Vehicles Built Up To: 11/2004(32 281 0)****Removal**

1. **Raise the vehicle.** For additional information, refer to Section 100-02 [Jacking and Lifting].
2. **Disconnect the fog lamp electrical connector.**



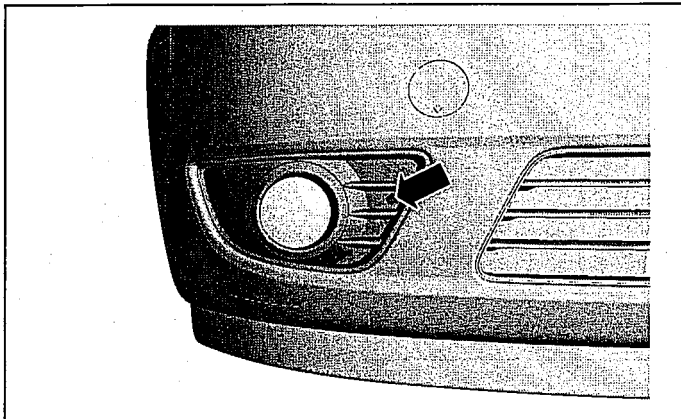
3. **Remove the fog lamp assembly.**

**Installation**

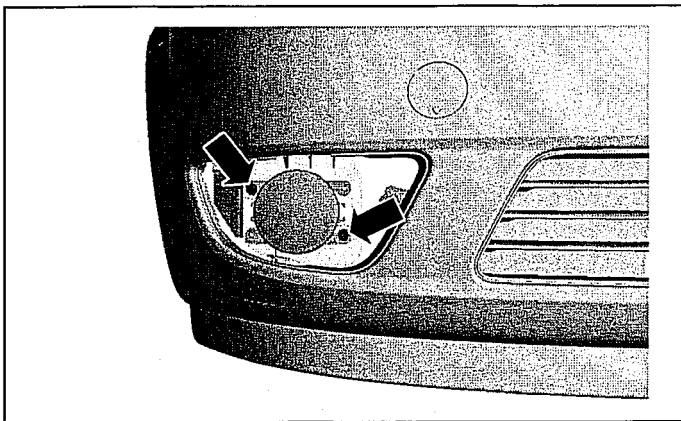
1. **Install the components in reverse order.**
2. **Adjust the fog lamps.**
For additional information, refer to Adjust the fog lamps. in this section.

REMOVAL AND INSTALLATION**Front Fog Lamp — Vehicles Built From: 11/2004(32 281 0)****Removal**

- **1. Remove the fog lamp bezel.**

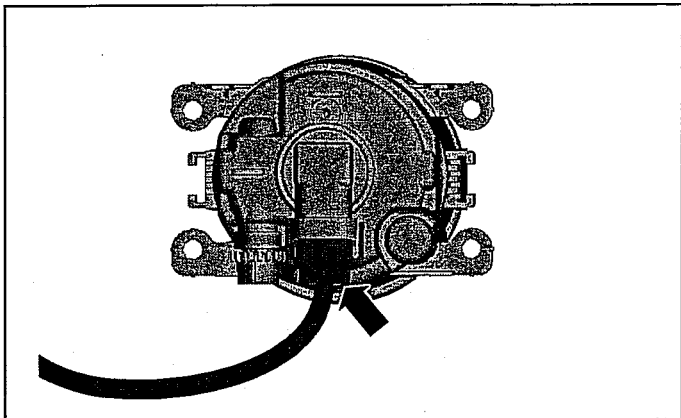


- 2. Detach the fog lamp from the fog lamp bracket.**



- 3. Remove the fog lamp assembly.**

- **Pull off the fog lamp connector.**

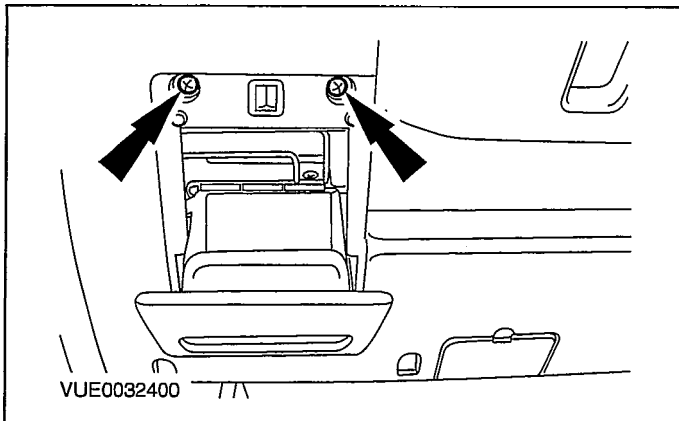
**Installation**

- 1. To assemble, reverse the disassembly procedure.**
- 2. Adjust the fog lamp beam alignment.**

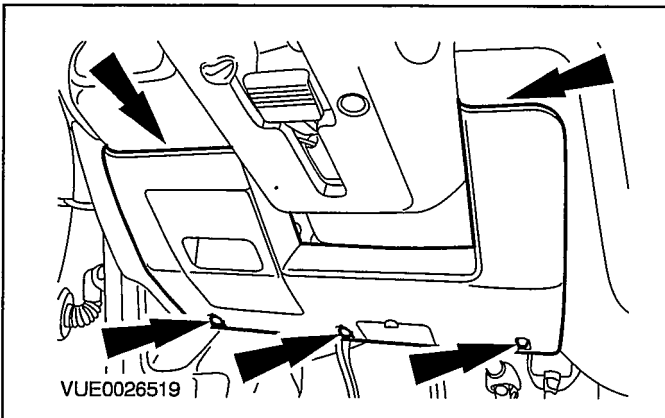
For additional information, refer to:
Front Fog Lamp Adjustment (417-01,
General Procedures).

REMOVAL AND INSTALLATION**Headlamp Switch(35 514 0)****Removal**

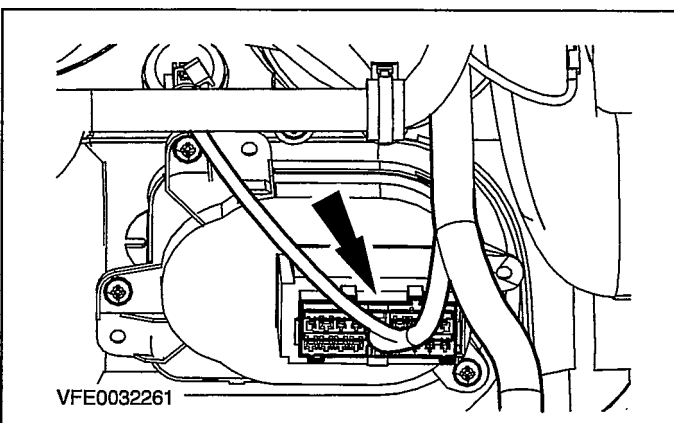
1. Open the stowage space and remove the screws for the facia crash padding lower trim.



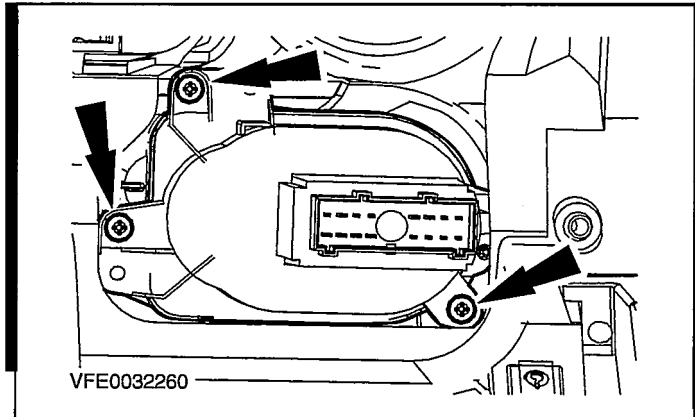
2. Detach the lower fascia/crash padding cover.



3. Disconnect the headlamp switch electrical connector.



4. Remove the headlamp switch.

**Installation**

1. Install the components in the reverse order.

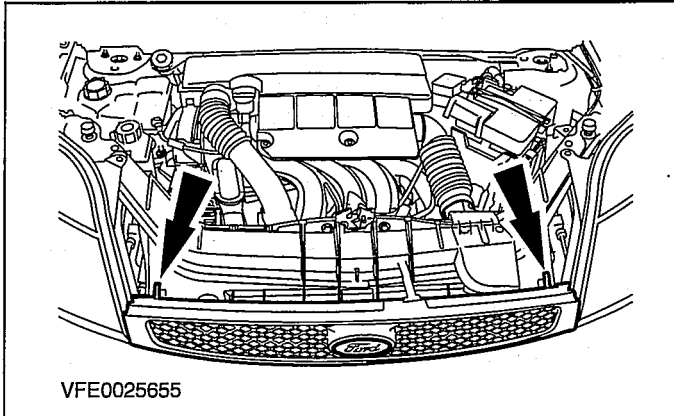
REMOVAL AND INSTALLATION

Headlamp Assembly(32 115 0)

Removal

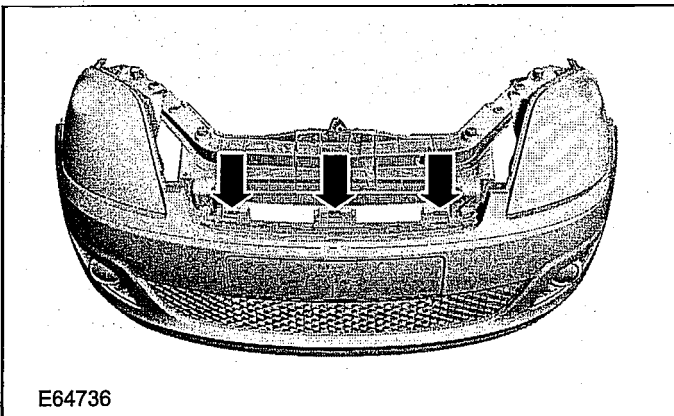
All vehicles

1. Remove the radiator grille.



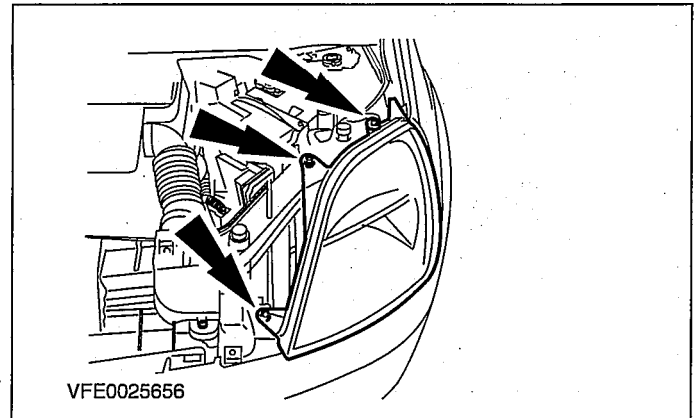
Vehicles built from 0812005

2. Partially detach the front bumper cover from the hood lock panel.
 - Pull the front bumper cover forward to gain access to the lower headlamp bolt.

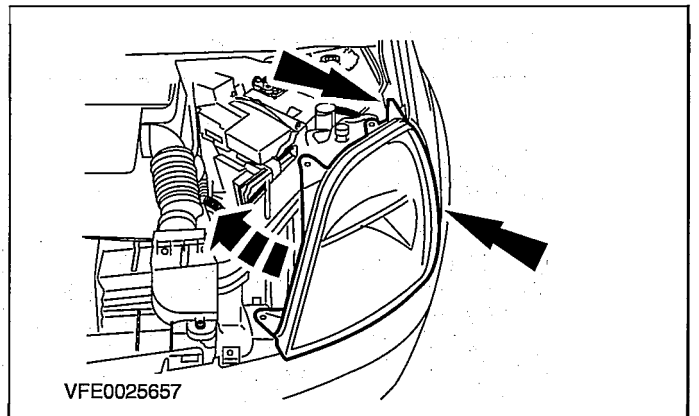


All vehicles

3. Unscrew and remove the **headlamp** bolts.

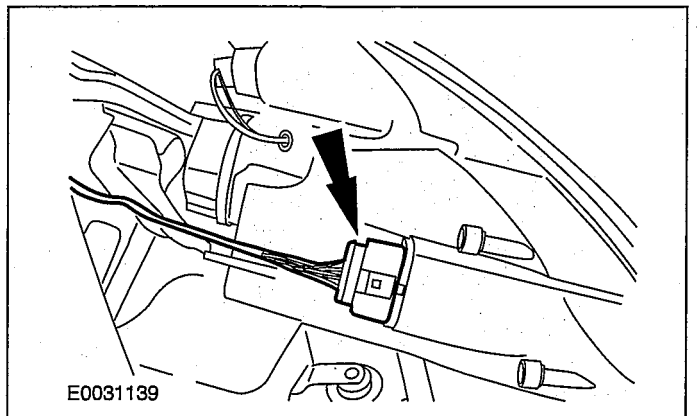


4. **CAUTION:** Do not damage the fixing points of the headlamps during removal.

Detach the **headlamp** from the hood lock panel.

5. Remove the **headlamp** assembly.

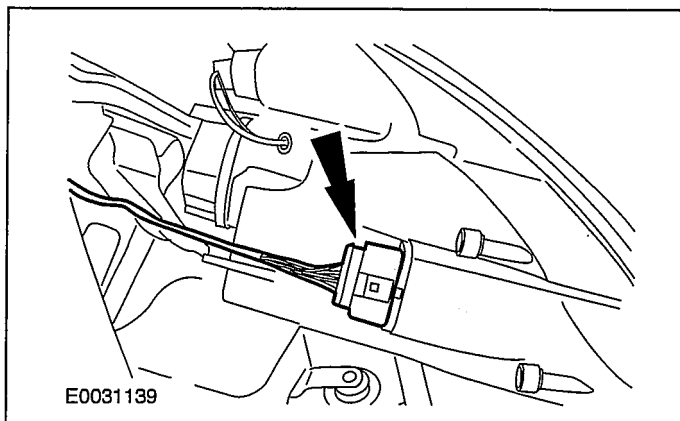
- Disconnect the headlamp electrical connector.



REMOVAL AND INSTALLATION**Installation**

All vehicles

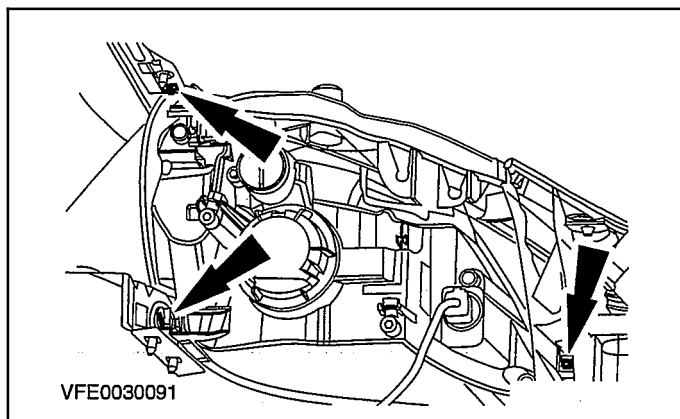
1. Connect the **headlamp** connector.



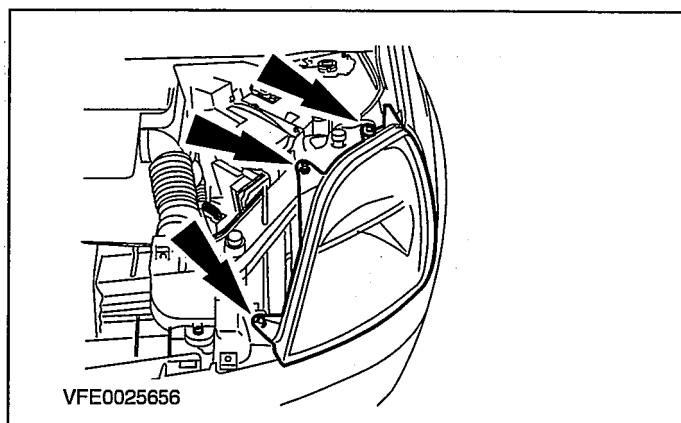
2. **NOTE:** Clean the lens with a damp cloth to prevent the build-up of electrostatic charge, which could cause dust to stick to the plastic lens.

NOTE: Check that the headlamp is engaged at the fixing points.

Install the **headlamp** assembly.

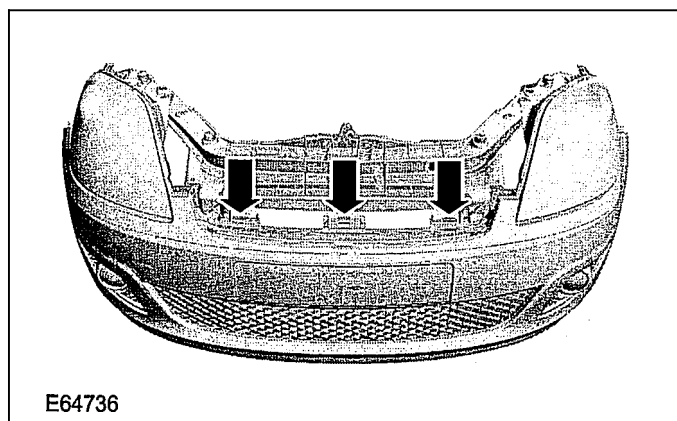


3. Screw in the **headlamp** bolts.



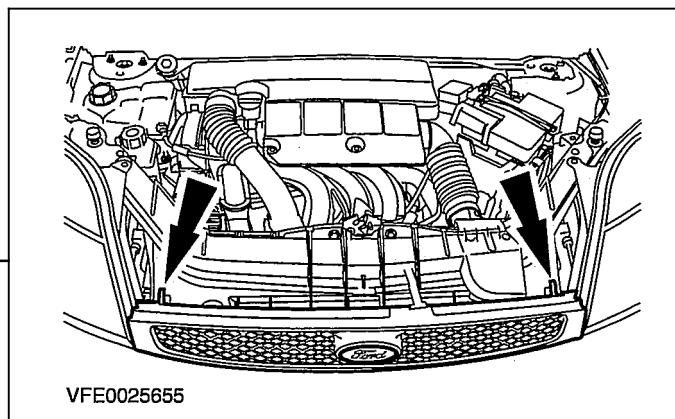
Vehicles built from 0812005

4. Fit the front bumper cover.



All vehicles

5. Install the radiator grill.

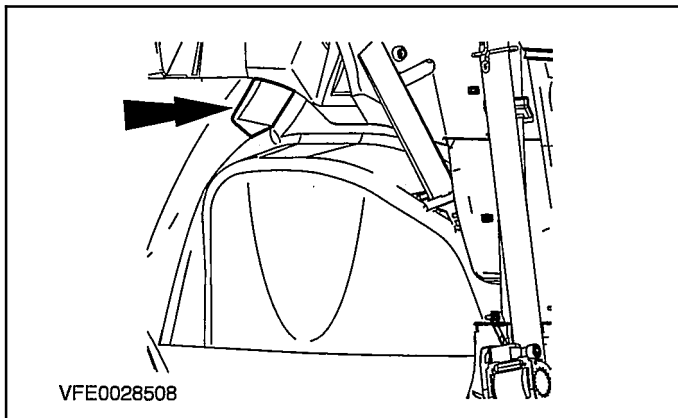


6. Adjust the headlamp.

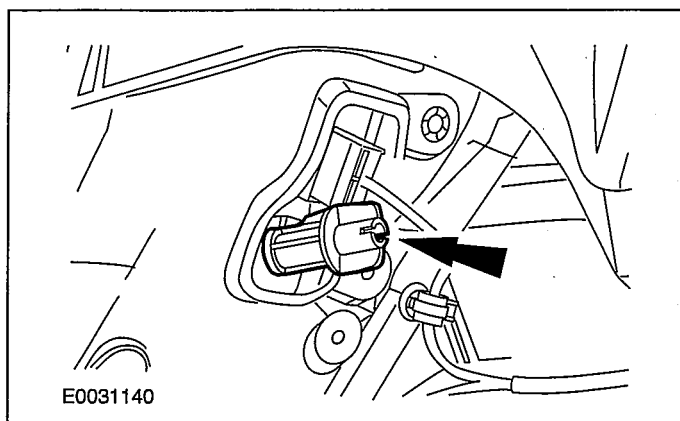
For additional information, refer to:
Headlamp Adjustment (417-01
Exterior Lighting, General Procedures).

REMOVAL AND INSTALLATION**Rear Lamp Assembly — Vehicles Built Up To: 10/2005(32 305 0)****Removal**

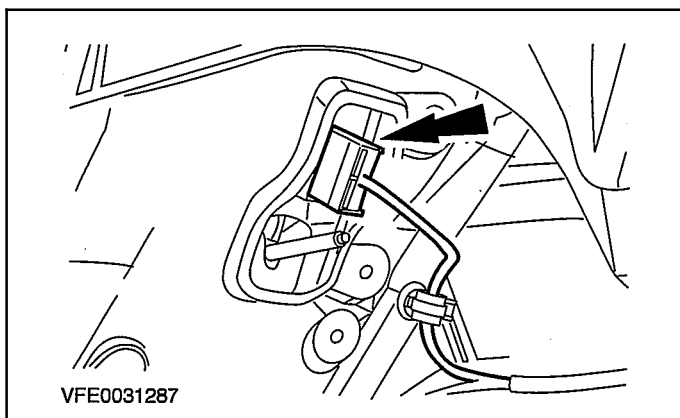
- Partially release the inner wheel arch trim panel and press it to one side.



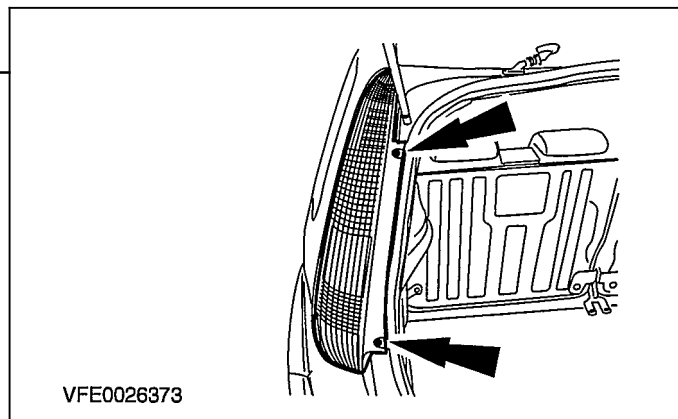
2. Unscrew the nut for the rear lamp assembly.



3. Disconnect the connector from the rear lamp assembly.

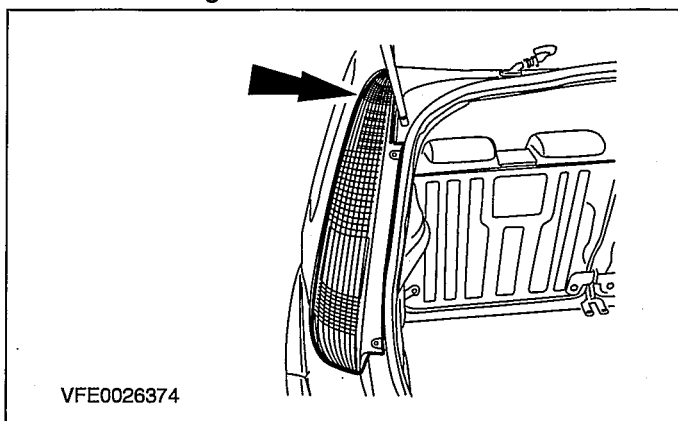


4. Unscrew the bolts from the rear lamp assembly.



5. Remove the rear lamp assembly.

- Pull out the rear lamp assembly from the mounting.

**Installation**

1. Install the components in the reverse order.



SECTION 417-02 Interior Lighting

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
DIAGNOSIS AND TESTING	
Interior Lighting — Vehicles Built Up To: 1012005.....	417-02-2
Inspection and Verification.....	417-02-2
Symptom Chart.....	417-02-2
Pinpoint Tests.....	417-02-3
Interior Lighting — Vehicles Built From: 1012005.....	417-02-11
Inspection and Verification.....	417-02-11
Symptom Chart.....	417-02-11
Pinpoint Tests.....	417-02-12

DIAGNOSIS AND TESTING**Interior Lighting — Vehicles Built Up To: 1012005**

Refer to Wiring Diagrams Section 417-02, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection Chart

Electrical
- Fuse(s)
- Transportation fuse pack

Electrical
- Wiring harness
- Electrical connector(s)
- Lamp(s)
- Switch(es)
- Generic Electronic Module (GEM)

3. If an obvious cause for an **observed** or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
• The front interior lamp is inoperative	<ul style="list-style-type: none"> • Fuse. • Bulb. • Circuit(s). • Interior lamp switch. • Front interior lamp. • GEM. 	• GO to Pinpoint Test A.
• The rear interior lamp is inoperative (Fusion only)	<ul style="list-style-type: none"> • Fuse. • Bulb. • Circuit(s). • Interior lamp switch. • Rear interior lamp. • GEM. 	• GO to Pinpoint Test B.
• Right-hand rear map reading lamp is inoperative (Fusion only)	<ul style="list-style-type: none"> • Fuse. • Bulb. • Circuit(s). • Map reading lamp. • GEM. 	• GO to Pinpoint Test C.
• Left-hand rear map reading lamp is inoperative (Fusion only)	<ul style="list-style-type: none"> • Fuse. • Bulb. • Circuit(s). • Map reading lamp. • GEM. 	• GO to Pinpoint Test D.
• The luggage compartment lamp is inoperative	<ul style="list-style-type: none"> • Fuse. • Bulb. • Circuit(s). • Luggage compartment lamp switch. • Luggage compartment lamp. • GEM. 	• GO to Pinpoint Test E.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The interior lamp does not automatically turn off after 10 minutes when the lamp is in the ILLUMINATED ENTRY position 	<ul style="list-style-type: none"> GEM. Circuit. 	<ul style="list-style-type: none"> CHECK circuit 31S-LC7 (BWBU) for short to ground. If the circuit is OK, INSTALL a new GEM. <p>REFER to: Generic Electronic Module (GEM) (419-10 Multi-function Electronic Modules, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
<ul style="list-style-type: none"> The interior lamp does not automatically turn off after 30 minutes when the lamp is in the ON position 	<ul style="list-style-type: none"> GEM. 	<ul style="list-style-type: none"> INSTALL a new GEM. <p>REFER to: Generic Electronic Module (GEM) (419-10 Multi-function Electronic Modules, Removal and Installation).</p> <p>TEST the system for normal operation.</p>

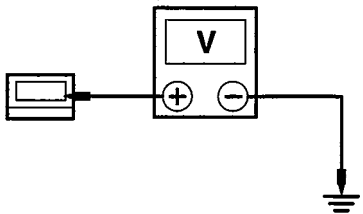
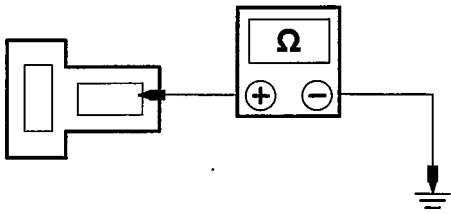
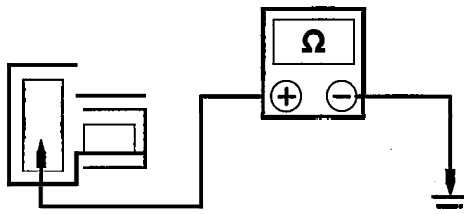
Pinpoint Tests

NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST A : THE FRONT INTERIOR LAMP IS INOPERATIVE

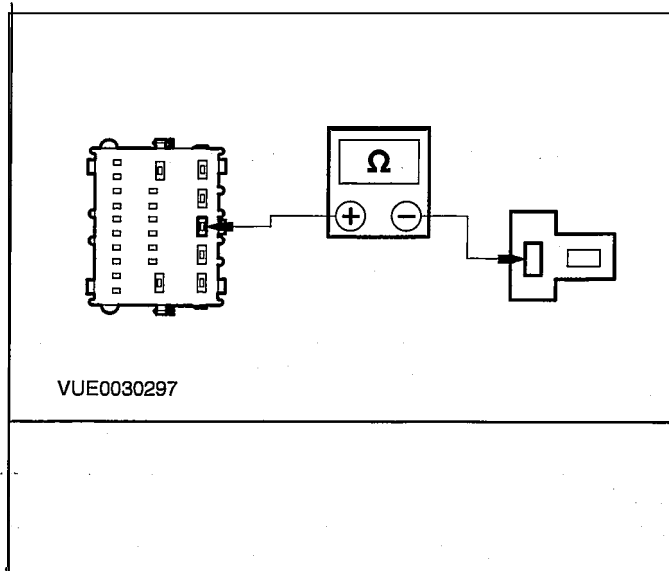
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK THE OPERATION OF THE FRONT INTERIOR LAMP	
	<p>(Check the operation of the front interior lamp in both the ON and ILLUMINATED ENTRY positions.</p> <ul style="list-style-type: none"> Is the front interior lamp inoperative in both positions? <p>→ Yes GO to A2.</p> <p>→ No If inoperative in the ON position, GO to A3. If inoperative in the ILLUMINATED ENTRY position, GO to A4.</p>
A2: CHECK THE FRONT INTERIOR LAMP FOR POWER	
	<ol style="list-style-type: none"> 1 Disconnect Front Interior Lamp C750. 2 Ignition switch in position II. 3 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VUE0003764</p>	<p>4 Measure the voltage between the front interior lamp C750 pin 1, circuit 29-LC7 (OGIBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to A3.</p> <p>→ No REPAIR circuit 29-LC7 (OGIBU). TEST the system for normal operation.</p>
A3: CHECK THE FRONT INTERIOR LAMP FOR GROUND	
 <p>VUE0003763</p>	<p>1 Disconnect Front Interior Lamp C751.</p> <p>2 Measure the resistance between the front interior lamp C751 pin 2, 31-LC7A (BK), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new front interior lamp. TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31-LC7A (BK). TEST the system for normal operation.</p>
A4: CHECK THE FRONT INTERIOR LAMP FOR GROUND WITH THE DRIVER DOOR OPEN	
 <p>VUE0003766</p>	<p>1 Disconnect Front Interior Lamp C751.</p> <p>2 Open the driver door.</p> <p>3 Measure the resistance between the front interior lamp C751 pin 1, 31S-LC7 (BWBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new front interior lamp. TEST the system for normal operation.</p> <p>→ No GO to A5.</p>
A5: CHECK CIRCUIT 31s-LC7 FOR OPEN CIRCUIT	
	<p>1 Disconnect GEM C316.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

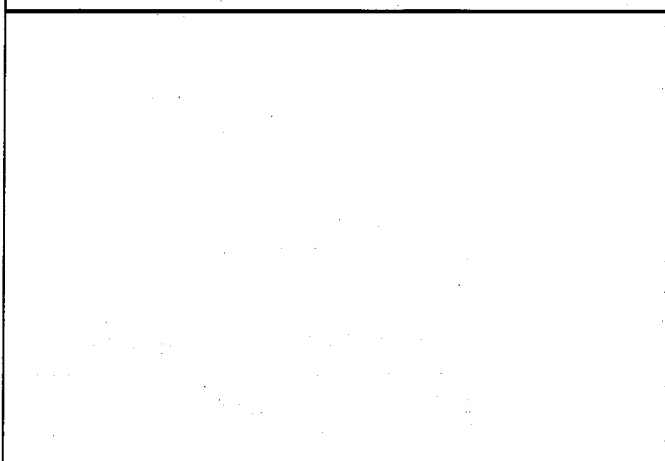
- ☐ Measure the resistance between the front interior lamp C751 pin 1, 31S-LC7 (BWBU), harness side and the GEM C316 pin 3, circuit 31S-LC7 (BWBU), harness side.
 - Is the resistance less than 5 ohms?
 - **Yes**
INSTALL a new GEM.
REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation).
TEST the system for normal operation.
 - **No**
REPAIR the circuit. TEST the system for normal operation.

PINPOINT TEST B : THE REAR INTERIOR LAMP IS INOPERATIVE (FUSION ONLY)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B1: CHECK THE OPERATION OF THE REAR INTERIOR LAMP



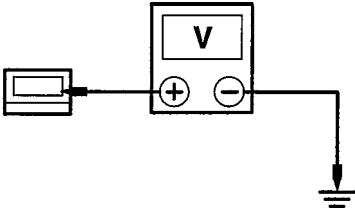
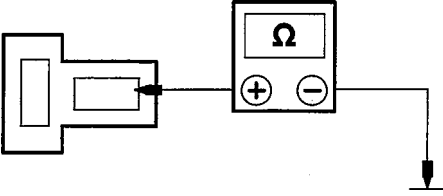
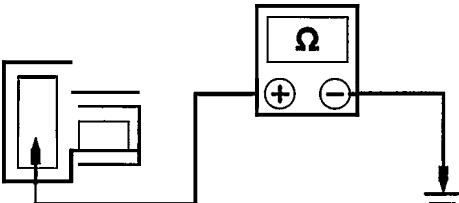
- ☐ Check the operation of the rear interior lamp in both the ON and ILLUMINATED ENTRY positions.
 - Is the rear interior lamp inoperative in both positions?
 - **Yes**
GO to B2.
 - **No**
If inoperative in the ON position, GO to B3.
If inoperative in the ILLUMINATED ENTRY position, GO to B4.

B2: CHECK THE REAR INTERIOR LAMP FOR POWER



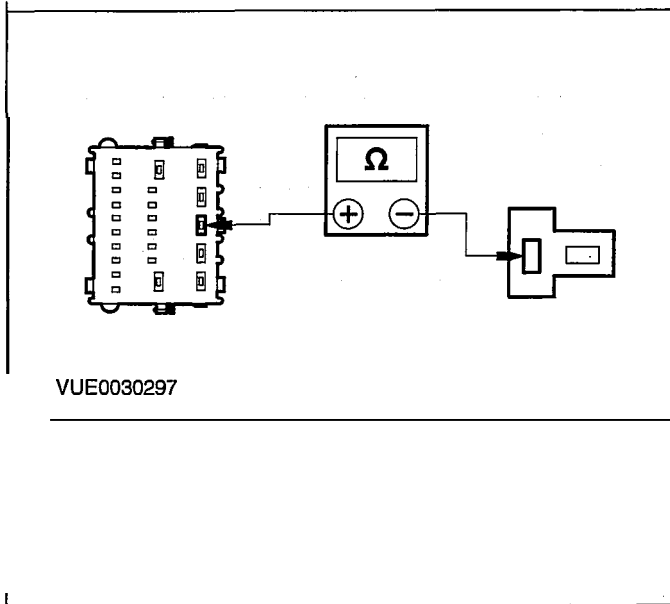
- 1** Disconnect Rear Interior Lamp C752.
- ☐ Ignition switch in position II.
- 3** Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VUE0003764</p>	<p>4 Measure the voltage between the rear interior lamp C752 pin 1, circuit 29-LC17 (OGNE), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to B3.</p> <p>→ No REPAIR circuit 29-LC17 (OGNE). TEST the system for normal operation.</p>
B3: CHECK THE REAR INTERIOR LAMP FOR GROUND	
 <p>VUE0003763</p>	<p><input type="checkbox"/> Disconnect Rear Interior Lamp C753.</p> <p>2 Measure the resistance between the rear interior lamp C753 pin 2, 31-LC17 (BK), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new rear interior lamp. TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31-LC17 (BK). TEST the system for normal operation.</p>
B4: CHECK THE REAR INTERIOR LAMP FOR GROUND WITH THE DRIVER DOOR OPEN	
 <p>VUE0003766</p>	<p><input type="checkbox"/> Disconnect Rear Interior Lamp C753.</p> <p><input type="checkbox"/> Open the driver door.</p> <p>3 Measure the resistance between the rear interior lamp C753 pin 1, 31S-LC17 (BK/YE), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new rear interior lamp. TEST the system for normal operation.</p> <p>→ No GO to B5.</p>
B5: CHECK CIRCUIT 31s-LC17 (BK/YE) AND CIRCUIT 31s-LC7 (BKIBU) FOR OPEN CIRCUIT	
<p><input type="checkbox"/> Disconnect GEM C316.</p>	

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the rear interior lamp C753 pin 1, 31S-LC17 (BK/YE), harness side and the GEM C316 pin 3, circuit 31s-LC7 (BWBU), harness side.

- Is the resistance less than 5 ohms?

→ **Yes**

INSTALL a new GEM.

REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation).

TEST the system for normal operation.

→ **No**

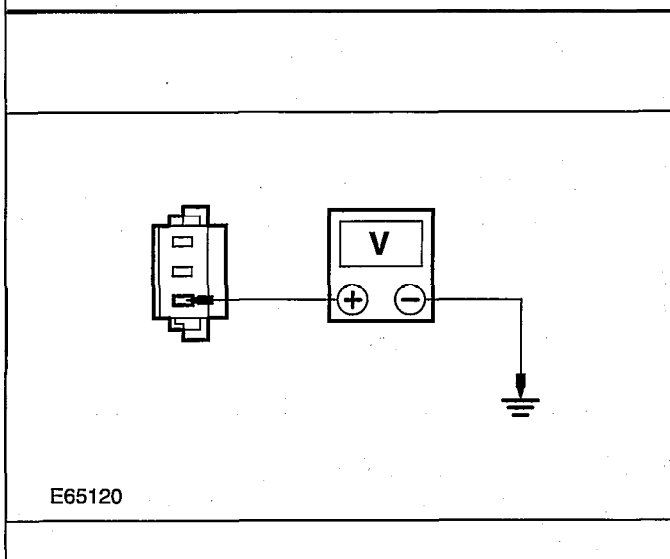
REPAIR circuit 31s-LC17 (BK/YE) or circuit 31SLC7 (BWBU) as necessary. TEST the system for normal operation.

PINPOINT TEST C : RIGHT-HAND REAR MAP READING LAMP IS INOPERATIVE (FUSION ONLY)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

C1: CHECK THE RIGHT-HAND REAR MAP READING LAMP FOR POWER



- ☐ Disconnect Right-Hand Rear Map Reading Lamp C490.

- 2 Measure the voltage between the right-hand rear map reading lamp C490 pin 1, circuit 29-LB21 (OG/BK), harness side and ground.

- Is the voltage greater than 10 volts?

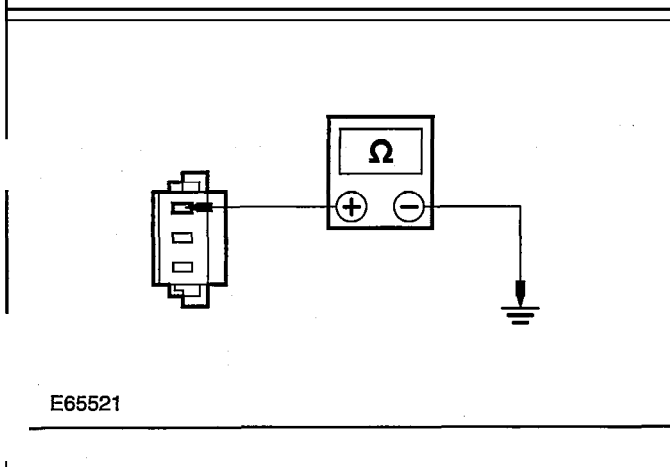
→ **Yes**

GO to C2.

→ **No**

REPAIR circuit 29-LB21 (OG/BK). TEST the system for normal operation.

C2: CHECK THE RIGHT-HAND REAR MAP READING LAMP FOR GROUND



- 1 Measure the resistance between the right-hand rear map reading lamp C490 pin 3, 31-LB21 (BK), harness side and ground.

- Is the resistance less than 5 ohms?

→ **Yes**

INSTALL a new right-hand rear map reading lamp. TEST the system for normal operation.

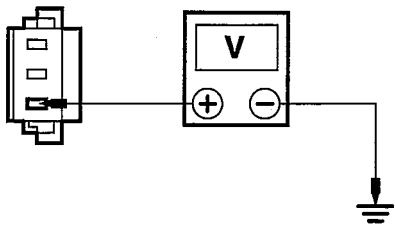
→ **No**

REPAIR circuit 31-LB21 (BK). TEST the system for normal operation.

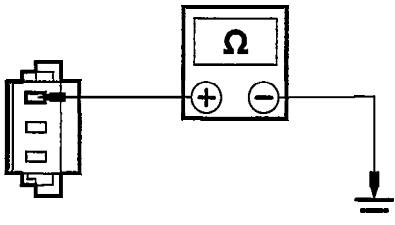
DIAGNOSIS AND TESTING

PINPOINT TEST D : LEFT-HAND REAR MAP READING LAMP IS INOPERATIVE (FUSION ONLY)

TEST CONDITIONS**DETAILS/RESULTS/ACTIONS****D1: CHECK THE LEFT-HAND REAR MAP READING LAMP FOR POWER**

	Disconnect Left-Hand Rear Map Reading Lamp C491.
 <p>E65120</p>	<p>Measure the voltage between the left-hand rear map reading lamp C491 pin 1, circuit 29-LB14 (OG), harness side and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <ul style="list-style-type: none"> → Yes GO to D2. → No REPAIR circuit 29-LB14 (OG). TEST the system for normal operation.

D2: CHECK THE LEFT-HAND REAR MAP READING LAMP FOR GROUND

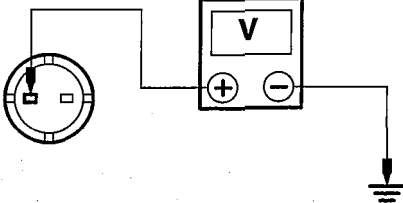
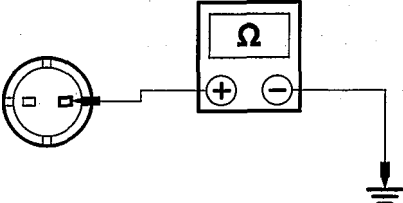
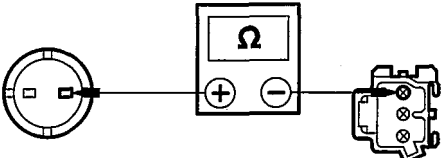
 <p>E65521</p>	<p>Measure the resistance between the left-hand rear map reading lamp C491 pin 3, 31-LB14 (BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <ul style="list-style-type: none"> → Yes INSTALL a new left-hand rear map reading lamp. TEST the system for normal operation. → No REPAIR circuit 31-LB14 (BK). TEST the system for normal operation.
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PINPOINT TEST E : THE LUGGAGE COMPARTMENT LAMP IS INOPERATIVE

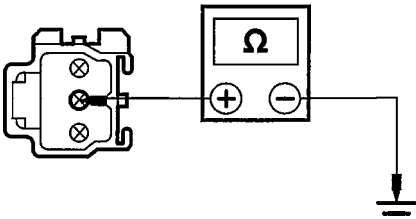
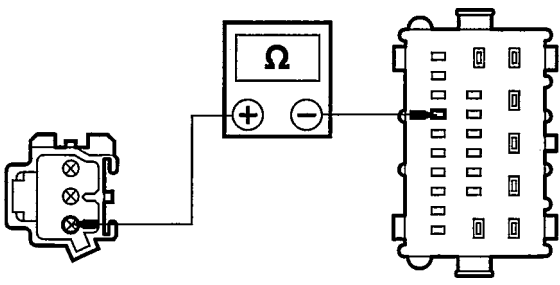
TEST CONDITIONS**DETAILS/RESULTS/ACTIONS****E1: CHECK THE LUGGAGE COMPARTMENT LAMP FOR POWER**

	1 Disconnect Luggage Compartment Lamp C576.
	2 Ignition switch in position II.
	3 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VUE0030298</p>	<p>4 Measure the voltage between the luggage compartment lamp C576 pin 1, circuit 29-LB25 (OGIBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to E2.</p> <p>→ No REPAIR circuit 29-LB25 (OGIBU). TEST the system for normal operation.</p>
E2: CHECK THE LUGGAGE COMPARTMENT LAMP FOR GROUND	
 <p>VUE0030299</p>	<p><input type="checkbox"/> Open the liftgate.</p> <p>2 Measure the resistance between the luggage compartment lamp C576 pin 2, circuit 31S-LB25 (BWBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new luggage compartment lamp. TEST the system for normal operation.</p> <p>→ No GO to E3.</p>
E3: CHECK CIRCUIT 31S-LB25 (BK/BU) OR CIRCUIT 31-LB25S (BK) FOR OPEN CIRCUIT	
 <p>VUE0030300</p>	<p>1 Disconnect Liftgate Switch C565.</p> <p>2 Measure the resistance between the luggage compartment lamp C576 pin 2, circuit 31S-LB25 (BWBU), harness side and the liftgate switch C565 pin 3, circuit 31S-LB25 (BWBU) or circuit 31-LB25S (BK) - vehicles with anti-theft alarm, harness side.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new liftgate switch. TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31S-LB25 (BWBU) or circuit 31-LB25S (BK) as necessary. TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>E4: CHECK THE LIFTGATE SWITCH FOR GROUND</p>  <p>E65735</p>	<p>1 Measure the resistance between the liftgate switch C565 pin 2, circuit 31-GL20 (BK), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new liftgate switch. TEST the system for normal operation. If the concern persists, GO to E5.</p> <p>→ No REPAIR circuit 31-GL20 (BK). TEST the system for normal operation.</p>
<p>E5: CHECK CIRCUIT 31S-GL20 (BKIRD) OR CIRCUIT 31-GL20S (BK) FOR OPEN CIRCUIT</p>  <p>E65738</p>	<p>1 Measure the resistance between the liftgate switch C565 pin 1, circuit 31S-GL20 (BWRD) or circuit 31-GL20S (BK) - vehicles with anti-theft alarm, harness side and the GEM C316 pin 20, circuit 31S-GL20 (BWRD), harness side.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new GEM. REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31S-GL20 (BWRD) or circuit 31-GL20S (BK) as necessary. TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING**Interior Lighting — Vehicles Built From: 1012005**

Refer to Wiring Diagrams Section 417-02, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection Chart

Electrical
- Fuse(s)
- Transportation fuse pack

Electrical
- Wiring harness
- Electrical connector(s)
- Lamp(s)
- Switch(es)
- Generic Electronic Module (GEM)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The front interior lamp is inoperative 	<ul style="list-style-type: none"> Fuse. Bulb. Circuit(s). Interior lamp switch. Front interior lamp. GEM. 	<ul style="list-style-type: none"> GO to Pinpoint Test A.
<ul style="list-style-type: none"> The rear interior lamp is inoperative (Fusion only) 	<ul style="list-style-type: none"> Fuse. Bulb. Circuit(s). Interior lamp switch. Rear interior lamp. GEM. 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
Right-hand rear map reading lamp is inoperative (Fusion only)	<ul style="list-style-type: none"> Fuse. Bulb. Circuit(s). Map reading lamp. GEM. 	GO to Pinpoint Test C.
<ul style="list-style-type: none"> Left-hand rear map reading lamp is inoperative (Fusion only) 	<ul style="list-style-type: none"> Fuse. Bulb. Circuit(s). Map reading lamp. GEM. 	<ul style="list-style-type: none"> GO to Pinpoint Test D.
<ul style="list-style-type: none"> The luggage compartment lamp is inoperative 	<ul style="list-style-type: none"> Fuse. Bulb. Circuit(s). Luggage compartment lamp switch. Luggage compartment lamp. GEM. 	<ul style="list-style-type: none"> GO to Pinpoint Test E.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> The interior lamp does not automatically turn off after 10 minutes when the lamp is in the ILLUMINATED ENTRY position 	<ul style="list-style-type: none"> GEM. Circuit. 	<ul style="list-style-type: none"> CHECK circuit 31s-LC7 (BKIBU) for short to ground. If the circuit is OK, INSTALL a new GEM. <p>REFER to: Generic Electronic Module (GEM) (419-10 Multi-function Electronic Modules, Removal and Installation).</p> <p>TEST the system for normal operation.</p>
<ul style="list-style-type: none"> The interior lamp does not automatically turn off after 30 minutes when the lamp is in the ON position 	<ul style="list-style-type: none"> GEM. 	<ul style="list-style-type: none"> INSTALL a new GEM. <p>REFER to: Generic Electronic Module (GEM) (419-10 Multi-function Electronic Modules, Removal and Installation).</p> <p>TEST the system for normal operation.</p>

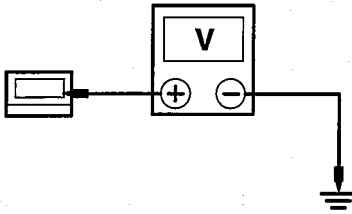
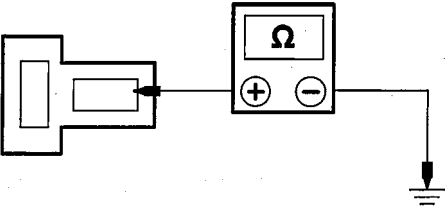
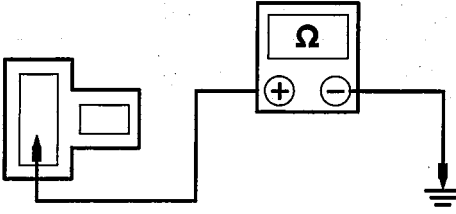
Pinpoint Tests

NOTE: Use a digital multimeter for all electrical measurements.

PINPOINT TEST F : THE FRONT INTERIOR LAMP IS INOPERATIVE

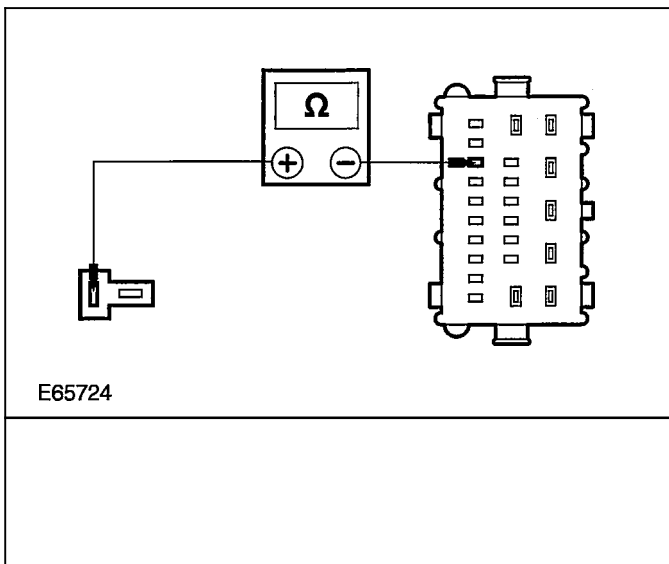
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK THE OPERATION OF THE FRONT INTERIOR LAMP	
	<ol style="list-style-type: none"> Check the operation of the front interior lamp in both the ON and ILLUMINATED ENTRY positions. <ul style="list-style-type: none"> Is the front interior lamp inoperative in both positions? <ul style="list-style-type: none"> → Yes GO to A2. → No If inoperative in the ON position, GO to A3. If inoperative in the ILLUMINATED ENTRY position, GO to A4.
A2: CHECK THE FRONT INTERIOR LAMP FOR POWER	
	<ol style="list-style-type: none"> Disconnect Front Interior Lamp C750. Ignition switch in position II. Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VUE0003764</p>	<p>4 Measure the voltage between the front interior lamp C750 pin 1, circuit 29-LC7 (OGIBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to A3.</p> <p>→ No REPAIR circuit 29-LC7 (OGIBU). TEST the system for normal operation.</p>
A3: CHECK THE FRONT INTERIOR LAMP FOR GROUND	
 <p>VUE0003763</p>	<p>1 Disconnect Front Interior Lamp C751.</p> <p>Measure the resistance between the front interior lamp C751 pin 2, 31-LC7 (BK), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new front interior lamp. TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31-LC7 (BK). TEST the system for normal operation.</p>
A4: CHECK THE FRONT INTERIOR LAMP FOR GROUND WITH THE DRIVER DOOR OPEN	
 <p>VUE0003766</p>	<p>1 Disconnect Front Interior Lamp C751.</p> <p>2 Open the driver door.</p> <p>3 Measure the resistance between the front interior lamp C751 pin 1, 31s-LC7 (BWBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new front interior lamp. TEST the system for normal operation.</p> <p>→ No GO to A5.</p>
A5: CHECK CIRCUIT 31s-LC7 FOR OPEN CIRCUIT	
	<p>1 Disconnect GEM C316.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2** Measure the resistance between the front interior lamp C751 pin 1, 31s-LC7 (BWBU), harness side and the GEM C316 pin 21, circuit 31s-LC7 (BWBU), harness side. CHECK
- Is the resistance less than 5 ohms?
- **Yes**
INSTALL a new GEM.
REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation).
TEST the system for normal operation.
- **No**
REPAIR the circuit. TEST the system for normal operation.

PINPOINT TEST G : THE REAR INTERIOR LAMP IS INOPERATIVE (FUSION ONLY)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

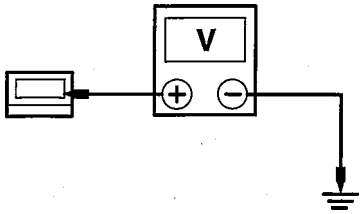
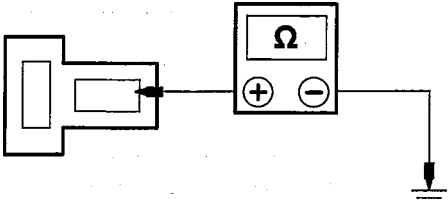
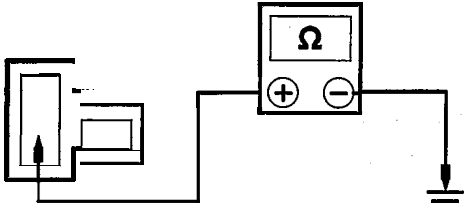
B1: CHECK THE OPERATION OF THE REAR INTERIOR LAMP

- ☐ Check the operation of the rear interior lamp in both the ON and ILLUMINATED ENTRY positions.
- Is the rear interior lamp inoperative in both positions?
- **Yes**
GO to B2.
- **No**
If inoperative in the ON position, GO to B3.
If inoperative in the ILLUMINATED ENTRY position, GO to B4.

B2: CHECK THE REAR INTERIOR LAMP FOR POWER

- ☐ Disconnect Rear Interior Lamp C752.
- 2** Ignition switch in position II.
- 3** Ignition switch in position 0.

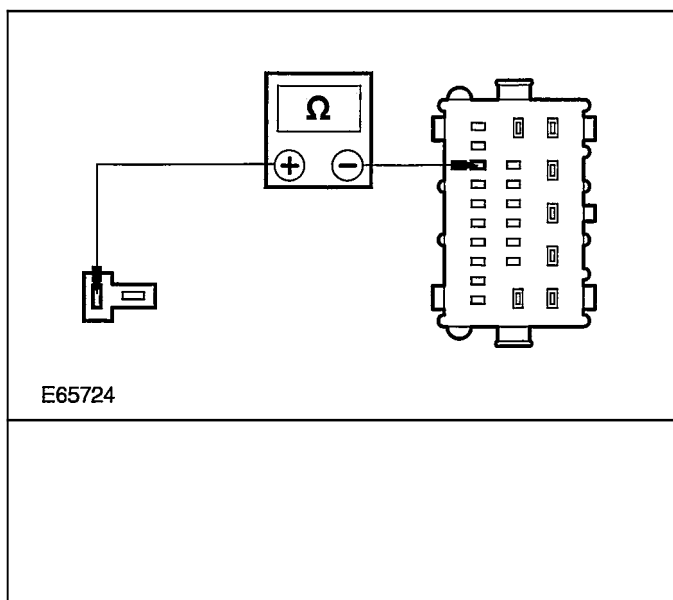
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS RESULTS ACTIONS
 <p>VUE0003764</p>	<p>Measure the voltage between the rear interior lamp C752 pin 1, circuit 29-LC17 (OGNE), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to B3.</p> <p>→ No REPAIR circuit 29-LC17 (OGNE). TEST the system for normal operation.</p>
B3: CHECK THE REAR INTERIOR LAMP FOR GROUND	
 <p>VUE0003763</p>	<p>1 Disconnect Rear Interior Lamp C753.</p> <p><input type="checkbox"/> Measure the resistance between the rear interior lamp C753 pin 2, 31-LC17 (BK), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new rear interior lamp. TEST the system for normal operation.</p> <p>→ No REPAIR circuit 31-LC17 (BK). TEST the system for normal operation.</p>
B4: CHECK THE REAR INTERIOR LAMP FOR GROUND WITH THE DRIVER DOOR OPEN	
 <p>VUE0003766</p>	<p>Disconnect Rear Interior Lamp C753.</p> <p><input type="checkbox"/> Open the driver door.</p> <p>Measure the resistance between the rear interior lamp C753 pin 1, 31S-LC17 (BK/YE), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new rear interior lamp. TEST the system for normal operation.</p> <p>→ No GO to B5.</p>
B5: CHECK CIRCUIT 31s-LC17 (BK/YE) AND CIRCUIT 31s-LC7 (BK/BU) FOR OPEN CIRCUIT	
	<p>1 Disconnect GEM C316.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



☐ Measure the resistance between the rear interior lamp C753 pin 1, 31S-LC17 (BK/YE), harness side and the GEM C316 pin 3, circuit 31s-LC7 (BWBU), harness side.

• Is the resistance less than 5 ohms?

→ **Yes**

INSTALL a new GEM.

REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation).

TEST the system for normal operation.

→ **No**

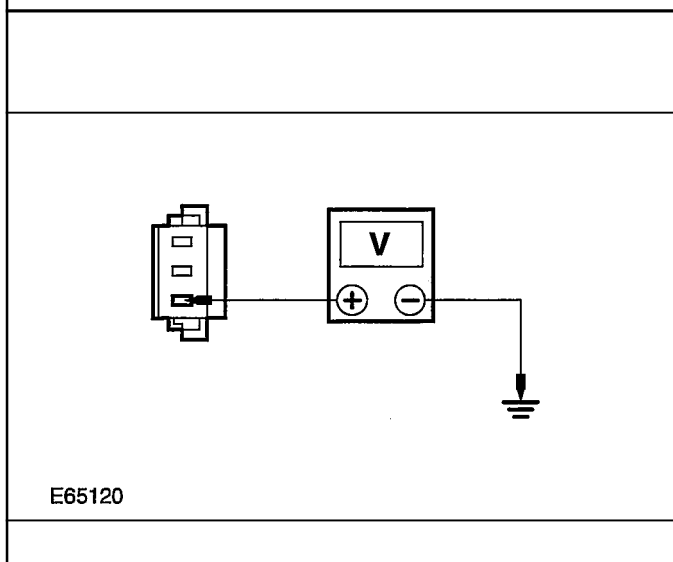
REPAIR circuit 31S-LC17 (BKNE) or circuit 31SLC7 (BWBU) as necessary. TEST the system for normal operation.

PINPOINT TEST H : RIGHT-HAND REAR MAP READING LAMP IS INOPERATIVE (FUSION ONLY)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

C1: CHECK THE RIGHT-HAND REAR MAP READING LAMP FOR POWER



☐ 1 Disconnect Right-Hand Rear Map Reading Lamp C490.

Measure the voltage between the right-hand rear map reading lamp C490 pin 1, circuit 29-LB21 (OGIBK), harness side and ground.

• Is the voltage greater than 10 volts?

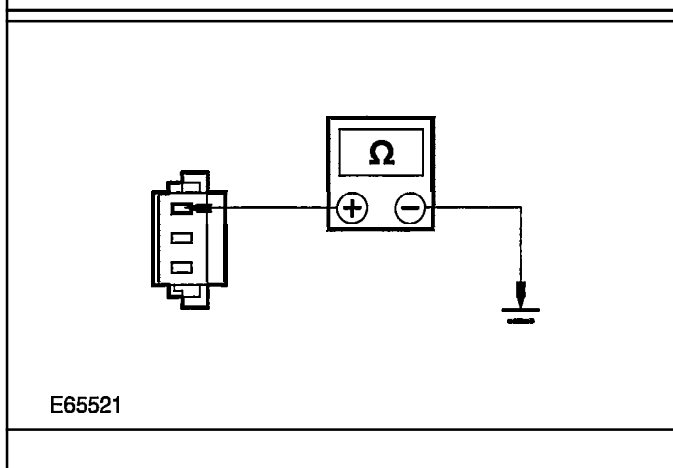
→ **Yes**

GO to C2.

→ **No**

REPAIR circuit 29-LB21 (OGIBK). TEST the system for normal operation.

C2: CHECK THE RIGHT-HAND REAR MAP READING LAMP FOR GROUND



Measure the resistance between the right-hand rear map reading lamp C490 pin 3, 31-LB21 (BK), harness side and ground.

• Is the resistance less than 5 ohms?

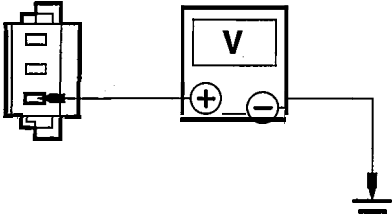
→ **Yes**

INSTALL a new right-hand rear map reading lamp. TEST the system for normal operation.

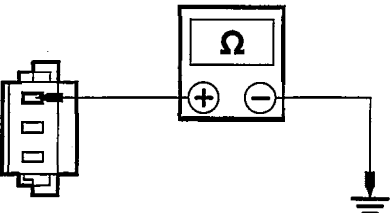
→ **No**

REPAIR circuit 31-LB21 (BK). TEST the system for normal operation.

DIAGNOSIS AND TESTING**PINPOINT TEST I : LEFT-HAND REAR MAP READING LAMP IS INOPERATIVE (FUSION ONLY)****TEST CONDITIONS****DETAILS/RESULTS/ACTIONS****D1: CHECK THE LEFT-HAND REAR MAP READING LAMP FOR POWER**

	1 Disconnect Left-Hand Rear Map Reading Lamp C491.
 <p>E65120</p>	2 Measure the voltage between the left-hand rear map reading lamp C491 pin 1, circuit 29-LB14 (OG), harness side and ground. <ul style="list-style-type: none"> Is the voltage greater than 10 volts? → Yes GO to D2. → No REPAIR circuit 29-LB14 (OG). TEST the system for normal operation.

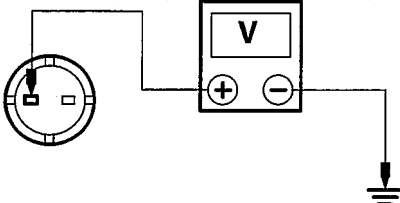
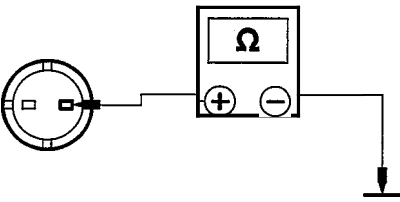
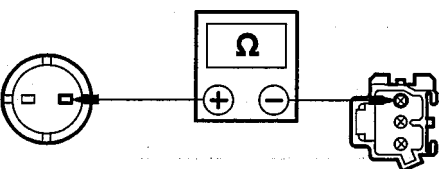
D2: CHECK THE LEFT-HAND REAR MAP READING LAMP FOR GROUND

 <p>E65521</p>	1 Measure the resistance between the left-hand rear map reading lamp C491 pin 3, circuit 31-LB14 (BK), harness side and ground. <ul style="list-style-type: none"> Is the resistance less than 5 ohms? → Yes INSTALL a new left-hand rear map reading lamp. TEST the system for normal operation. → No REPAIR circuit 31-LB14 (BK). TEST the system for normal operation.
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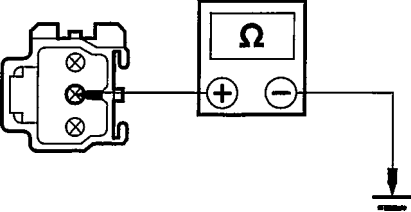
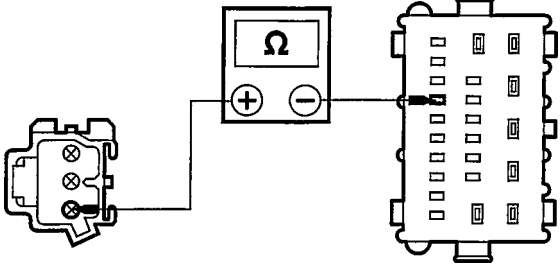
PINPOINT TEST J : THE LUGGAGE COMPARTMENT LAMP IS INOPERATIVE**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS****E1: CHECK THE LUGGAGE COMPARTMENT LAMP FOR POWER**

	1 Disconnect Luggage Compartment Lamp C576.
	2 Ignition switch in position II.
	3 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VUE0030298</p>	<p>4 Measure the voltage between the luggage compartment lamp C576 pin 1, circuit 29-LB25 (OGIBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the voltage greater than 10 volts? <p>→ Yes GO to E2.</p> <p>→ No REPAIR circuit 29-LB25 (OGIBU). TEST the system for normal operation.</p>
E2: CHECK THE LUGGAGE COMPARTMENT LAMP FOR GROUND	
 <p>VUE0030299</p>	<p>1 Open the liftgate.</p> <p>2 Measure the resistance between the luggage compartment lamp C576 pin 2, circuit 31S-LB25 (BWBU), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new luggage compartment lamp. TEST the system for normal operation.</p> <p>→ No GO to E3.</p>
E3: CHECK CIRCUIT 31S-LB25 (BK/BU) FOR OPEN CIRCUIT	
 <p>VUE0030300</p>	<p>1 Disconnect Liftgate Switch C565.</p> <p>2 Measure the resistance between the luggage compartment lamp C576 pin 2, circuit 31S-LB25 (BWBU), harness side and the liftgate switch C565 pin 3, circuit 31S-LB25 (BWBU), harness side.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new liftgate switch. TEST the system for normal operation. If the concern persists, GO to E4.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>E4: CHECK THE LIFTGATE SWITCH FOR GROUND</p>  <p>E65735</p>	<p>1 Measure the resistance between the liftgate switch C565 pin 2, circuit 31-GL20 (BK), harness side and ground.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new liftgate switch. TEST the system for normal operation. If the concern persists, GO to E5.</p> <p>→ No REPAIR circuit 31-GL20 (BK). TEST the system for normal operation.</p>
<p>E5: CHECK CIRCUIT 31S-GL20 (BK/RD) FOR OPEN CIRCUIT</p>  <p>E65738</p>	<p>1 Measure the resistance between the liftgate switch C565 pin 1, circuit 31S-GL20 (BWRD), harness side and the GEM C316 pin 20, circuit 31S-GL20 (BWRD), harness side.</p> <ul style="list-style-type: none"> Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new GEM. REFER to: Generic Electronic Module (GEM) (419-10 Multifunction Electronic Modules, Removal and Installation). TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>



SECTION 418-00 Module Communications Network

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

DESCRIPTION AND OPERATION

Communications Network.....	418-00-2
General.....	418-00-2
Network Components.....	418-00-3

DIAGNOSIS AND TESTING

Communications Network — Vehicles Built Up To: 1012005.....	418-00-7
Inspection and Checking.....	418-00-7
Symptom Chart.....	418-00-7
System Checks.....	418-00-9
Component Tests.....	418-00-97
Communications Network — Vehicles Built From: 1012005.....	418-00-98
Inspection and Testing.....	418-00-98
Symptom chart.....	418-00-98
Pinpoint Tests.....	418-00-100
Component Tests.....	418-00-208

DESCRIPTION AND OPERATION

Communications Network

General

In a communications network (data bus system), various modules of different systems are connected to one another via one or several lines.

The sole purpose of the data bus system is the transmission of data between the connected modules themselves, as well as between the connected modules and the Worldwide Diagnostic System (WDS).

In a data bus system, complete data blocks are transmitted instead of single in/out pulses. In addition to the actual information, these data blocks also contain data regarding the address of the module to be addressed, the size of the data block and information for monitoring the content of each individual data block.

Data bus systems offer various advantages:

- Simplified data transmission between the modules due to a standardized protocol
- Fewer sensors and connectors
- Improved diagnostic options
- Lower costs

The WDS is connected to the various bus systems and to the power supply via the standard 16-pin Data Link Connector (DLC). The signal for the module programming is also transmitted via the DLC.

If, in a data bus system, there is a break in one or both lines or a short to ground or short to voltage is present, then communication between the modules and with the WDS is faulty or is no longer possible at all.

In order to be able to establish communication with one another, the modules of the individual systems must use the same language. This language is called a protocol.

At present, Ford uses three different data bus systems. Depending upon model and equipment level, all three data bus systems are used. Each of these data bus systems has its own protocol.

Data bus systems:

- Standard Corporate Protocol (SCP) bus. This consists of two twisted wires. It is used for communication between the Powertrain Control Module (PCM) and the WDS via the DLC. Depending upon engine version and year of

manufacture, a third wire (ACP bus) is used for programming the PCM. This bus is only used in conjunction with the SCP bus.

- International Organization for Standardization ISO 9141 bus. This consists of a single wire and is used exclusively for communication between the modules and the WDS. The fault memories of the various modules are read out via the ISO 9141 bus.
- Controller Area Network (CAN) bus. This consists of two twisted wires and operates serially (data is transmitted sequentially). It is used for communication between the modules themselves and between the modules and the WDS. The modules are connected to the data bus in parallel. New modules can be incorporated easily, without modifying the other wiring or modules. The transmitted data is received by every module connected to the CAN bus. As each data packet has an identifier, in which the priority of the message is determined as well as the content identification, each module can detect whether or not the data is relevant for its own information processing. This enables several modules to be addressed with a particular data packet and supplied with data simultaneously. For this purpose, it is ensured that important data (for example from the Anti-lock Brake System (ABS)) is transmitted first. The other modules are only able to submit their data to the data bus **after** the high-priority messages have been received.

In order to guarantee a high degree of error protection, two 120 Ohm terminating resistors are installed in the CAN bus. These are integrated in the first module connected to the CAN bus and in the last module connected to the CAN bus respectively and are used for suppression as well as the elimination of voltage peaks. In order to ensure correct functioning of the data bus system, the modules must always be connected with an integral terminating resistor.

The advantages of the CAN bus are:

- Minimization of wiring requirements
- High degree of error protection (fault / fail-proof)
- Robustness
- Good extendibility
- Prioritization of messages
- Inexpensive

DESCRIPTION AND OPERATION

- Automatic repetition of faulty messages
- Independent system monitoring and option for automatic disconnection of faulty modules from the data bus.

In vehicles built from MY 2003.75, an additional second CAN bus system is used depending upon vehicle model. The only significant difference is a lower transmission rate and it is mainly used for the convenience electronics at present. In order to be able to differentiate between individual CAN bus systems, the CAN bus system with the high transmission rate is designated as high-speed (HS) CAN bus and the CAN bus system with the lower transmission rate as mid-speed (MS) CAN bus. As in all CAN bus systems, two 120 Ohm terminating resistors are also installed in the MS CAN bus in order to increase the error protection. In order to enable communication between the modules on the HS CAN bus and the modules on the MS CAN bus, one module is connected to both data bus systems. The connection of both data bus systems is designated as gateway. In this gateway, the received data is converted to the transmission rate required for the relevant data bus and is transmitted. This ensures an optimal distribution of information between both data bus systems.

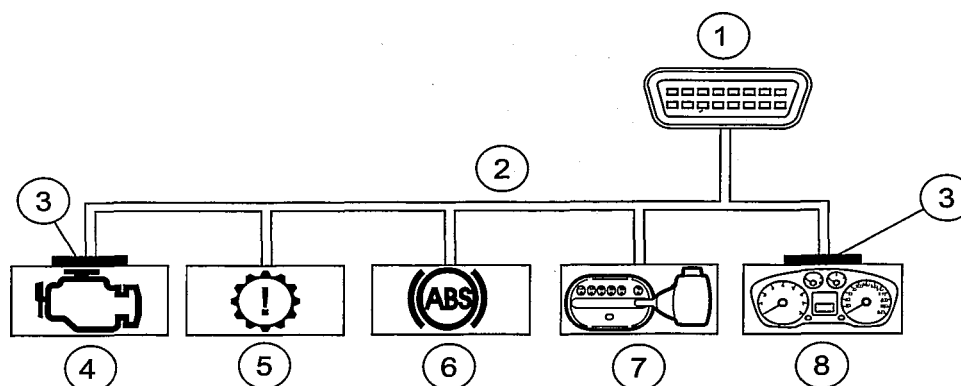
Due to the increased number of modules and the resulting ever-increasing data transmission, a second CAN bus (mid-speed CAN bus (MS CAN)) is used in the Fiesta and in the Fusion built from MY 2006. This operates at a lower speed and is mainly used for communication relating to the convenience electronics. A gateway is used in order to enable data exchange between the HS CAN bus and the MS CAN bus. The gateway serves as interface between the two CAN data bus systems and is installed in the electronic instrument cluster. The modules connected to the two CAN data bus systems depend upon the equipment level of the vehicle. One 120 Ohm terminating resistor of the HS CAN bus is installed in the PCM and in the electronic instrument cluster respectively. One 120 Ohm terminating resistor of the MS CAN bus is installed in the Generic Electronic Module (GEM) and in the electronic instrument cluster respectively. These terminating resistors are used for suppression of the data bus system. In order to be able to ensure correct functioning of the data bus system, the modules must always be connected with an integral terminating resistor.

The number of modules connected to the two data bus systems depend upon the equipment level of the vehicle.

Network Components

The ISO 9141 and the CAN bus are used in the Fiesta built from MY2002.25 and in the Fusion.

CAN bus - vehicles built up to MY 2006



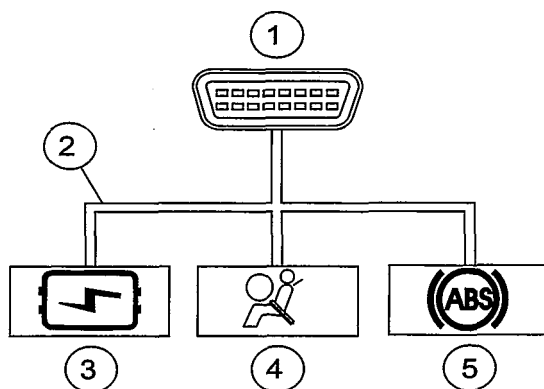
E57610

DESCRIPTION AND OPERATION

Item	Description
1	DLC.
2	High-speed CAN bus.
3	Terminating resistors.
4	PCM.
5	Automatic transmission module - vehicles with automatic transmission / Transmission Control Module (TCM) - vehicles with automatic clutch and gearshift mechanism
6	ABS module or ESP module

Item	Description
7	Transmission selector unit - vehicles with automatic clutch and gearshift mechanism
8	Electronic instrument cluster.

One 120 Ohm terminating resistor is installed in the PCM and in the electronic instrument cluster respectively. These terminating resistors are used for suppression of the bus system. In order to be able to ensure correct functioning of the bus system, the modules must always be connected with an integral terminating resistor.

ISO 9141 bus - vehicles built up to MY 2006

E57609

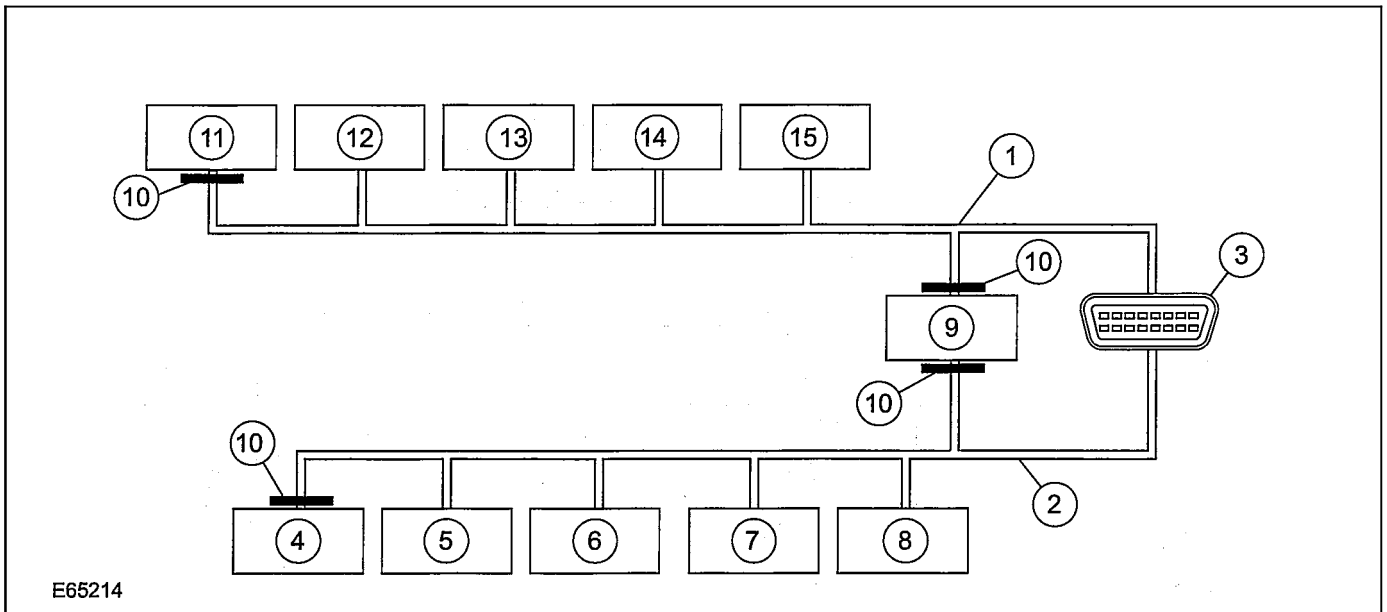
Item	Description
1	DLC.
2	ISO 9141 bus.
3	GEM
4	Restraints Control Module (RCM)
5	ABS module or ESP module

The modules connected to the ISO 9141 bus depend upon the equipment level of the vehicle. The ISO 9141 bus is used solely for reading out the fault memory of the modules connected to the bus.

The ISO 9141 bus connects the various modules to the WDS via the DLC.

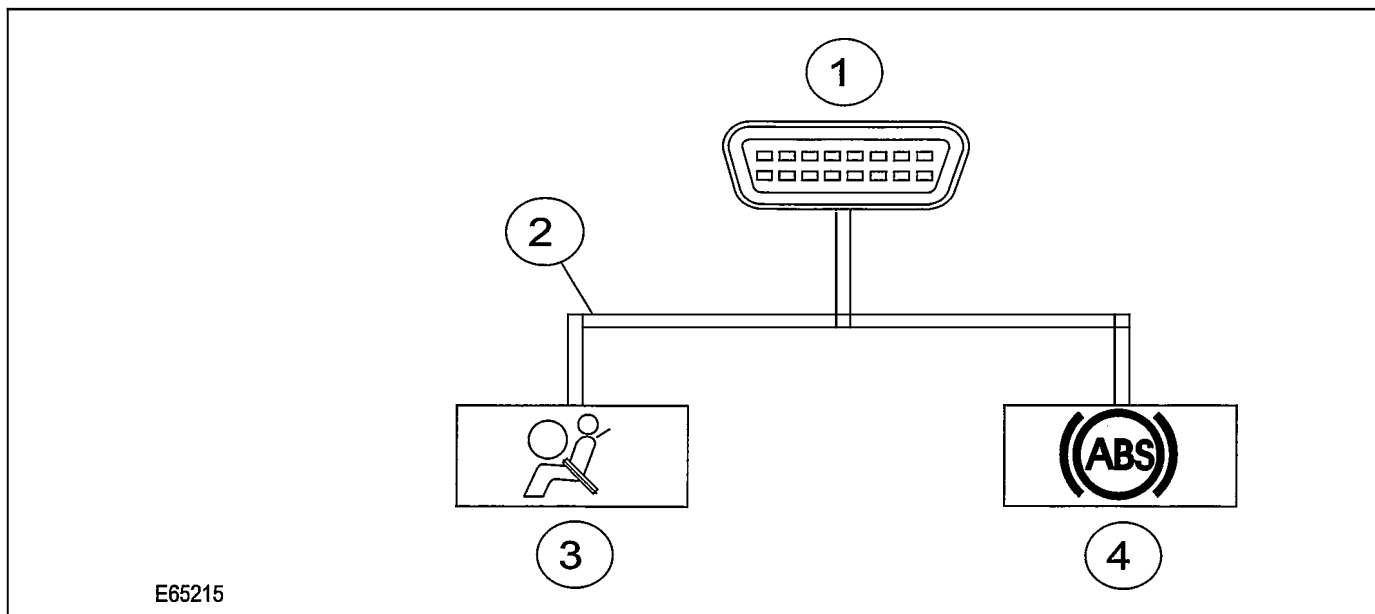
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CAN bus - vehicles built from MY 2006

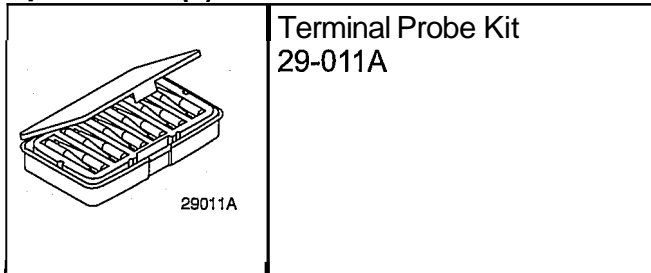


Item	Description
1	Mid-speed CAN bus (MS-CAN).
2	High-speed CAN bus (HS CAN).
3	DLC.
4	PCM.
5	Automatic transmission module - vehicles with automatic transmission/ TCM - vehicles with automatic clutch and gearshift mechanism.
6	Transmission selector unit - vehicles with automatic clutch and gearshift mechanism

Item	Description
7	Electro-hydraulic Power Steering (EHPS).
8	ABS module or ESP module
9	Electronic instrument cluster.
10	Terminating resistors.
11	GEM
12	Bluetooth/voice control module.
13	Radio tuner.
14	Electronic Automatic Temperature Control (EATC) module
15	RCM

DESCRIPTION AND OPERATION**ISO 9141 bus - vehicles built from MY 2006**

Item	Description
1	DLC.
2	ISO 9141 bus.
3	RCM
4	ABS module or ESP module

DIAGNOSIS AND TESTING**Communications Network — Vehicles Built Up To: 1012005****Special Tool(s)**

Terminal Probe Kit
29-011A

General Equipment

Digital Multimeter

Worldwide Diagnostic System (WDS)

Visual Inspection**Electrical**

- Fuse(s).
- Wiring harness.
- Plugs.

Inspection and Checking

1. CHECK the concern.
2. Visually CHECK for any obvious mechanical or electrical damage.
3. RECTIFY any obvious causes for a concern found during the visual inspection before performing any further tests. CHECK the operation of the system.
4. If the concern persists after the visual inspection, PERFORM a fault diagnosis with WDS and RECTIFY any displayed faults in accordance with the displayed fault description. CHECK the operation of the system.
5. For vehicles with no stored fault(s), PROCEED in accordance with the symptom chart according to the fault symptom.
6. Following checking or elimination of the fault and after completion of operations, the fault memories of all vehicle modules must be READ OUT and any stored faults must be DELETED. READ OUT all fault memories again following a road test.

Symptom Chart**Symptom Chart**

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Safety restraint control module (RCM) not communicating with the diagnostic unit 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Restraints control module (RCM). 	<ul style="list-style-type: none"> GO to Pinpoint Test A.
<ul style="list-style-type: none"> ABS module or ESP module not communicating with the diagnostic unit 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). ABS module or ESP module. 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
<ul style="list-style-type: none"> Generic electronic module (GEM) not communicating with the diagnostic tester 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Generic electronic module (GEM). 	<ul style="list-style-type: none"> GO to Pinpoint Test D.
<ul style="list-style-type: none"> Powertrain control module (PCM) not communicating with the diagnostic tester 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). PCM. 	<ul style="list-style-type: none"> GO to Pinpoint Test E.
<ul style="list-style-type: none"> Power steering pump module not communicating with the diagnostic tester 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Power steering pump module. 	<ul style="list-style-type: none"> GO to Pinpoint Test C.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Instrument cluster not communicating with the diagnostic unit 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Instrument cluster. 	<ul style="list-style-type: none"> GO to Pinpoint Test F.
<ul style="list-style-type: none"> Transmission control module (TCM) not communicating with the diagnostic tester 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). TCM. 	<ul style="list-style-type: none"> - Vehicles with automatic clutch and gearshift actuation: GO to Pinpoint Test G. - Vehicles with automatic transmission: GO to Pinpoint Test H.
<ul style="list-style-type: none"> Faulty communication between the modules (ISO 9141 bus) 	<ul style="list-style-type: none"> Circuit(s). Generic electronic module (GEM). Restraints control module (RCM). ABS module or ESP module. 	<ul style="list-style-type: none"> GO to Pinpoint Test I.
<ul style="list-style-type: none"> Faulty communication between the modules (CAN bus) 	<ul style="list-style-type: none"> Circuit(s). Instrument cluster. ABS module or ESP module. Transmission control module (TCM) - vehicles with automatic clutch and gearshift actuation. Transmission selector unit - vehicles with automatic clutch and gearshift actuation. Transmission control unit (TCM) - vehicles with automatic transmission Power steering pump module. Powertrain control module (PCM). 	<ul style="list-style-type: none"> GO to Pinpoint Test J.

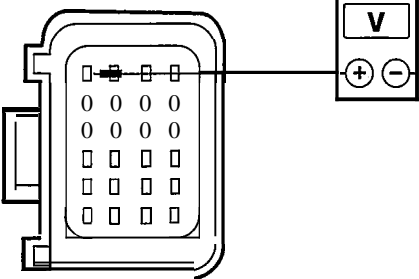
DIAGNOSIS AND TESTING

System Checks

PINPOINT TEST A : SAFETY RESTRAINT CONTROL MODULE (RCM) NOT COMMUNICATING WITH THE DIAGNOSTIC UNIT

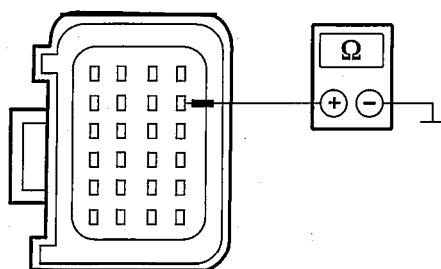
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
WARNINGS: <p>▲ The backup power supply must be depleted to prevent the risk of accidental airbag deployment. After disconnecting the battery, wait at least 1 minute before starting work on the safety restraint system. Failure to observe this instruction can lead to injury.</p> <p>▲ Do not program any keycodes while working on the safety restraint system in order to prevent the risk of accidental deployment of safety restraint system components. Failure to observe this instruction can lead to injury.</p> <p>▲ Only test the connectors of airbags or other safety restraint systems using the correct test probe adapter. Failure to observe this instruction can lead to injury.</p>	
A1: DETERMINE THE CONDITIONS UNDER WHICH THE FAULT OCCURS	
	1 Ignition switch in position 0.
	<input type="checkbox"/> Connect the diagnostic tool.
	3 Select the generic electronic module (GEM) with the diagnostic tester. <ul style="list-style-type: none"> Is it possible to establish communication with the GEM? → Yes GO to A2. → No GO to Pinpoint Test I.
A2: CHECK FUSE F39	
	1 Ignition switch in position 0.
	2 CHECK fuse F39 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to A3. → No INSTALL A NEW fuse F39 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
A3: CHECK THE VOLTAGE AT FUSE F39	
	<input type="checkbox"/> Connect fuse F39 (CJB).
	2 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSRESULTSACTIONS
	<div>3</div> Measure the voltage between fuse F39 (7.5 A) and ground. <ul style="list-style-type: none">Does the meter display battery voltage? <div>→ Yes</div> GO to A4. <div>→ No</div> REPAIR the voltage supply to fuse F39 using the Wiring Diagrams. CHECK the operation of the system.
A4: CHECK THE VOLTAGE AT THE SAFETY RESTRAINT CONTROL MODULE (RCM)	
	<div><input type="checkbox"/></div> Ignition switch in position 0.
	<div>2</div> Disconnect the ground cable from the battery.
	<div>3</div> Disconnect connector C500 from safety restraint control module (RCM).
	<div>4</div> Connect the ground cable to the battery.
	<div><input type="checkbox"/></div> Ignition switch in position II.
<div></div> <div>VFE0028954</div>	<div>6</div> Measure the voltage between the safety restraint control module (RCM), connector C500, pin 1, circuit 15-JA10 (GN/OG), wiring harness side and ground. <ul style="list-style-type: none">Does the meter display battery voltage? <div>→ Yes</div> GO to A5. <div>→ No</div> LOCATE and REPAIR the break in circuit 15-JA10 (GN/OG) between the safety restraint control module (RCM) and fuse F39 using the Wiring Diagrams. CHECK the operation of the system.
A5: CHECK THE GROUND CONNECTION OF THE SAFETY RESTRAINT CONTROL MODULE (RCM)	
	<div><input type="checkbox"/></div> Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0028956

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the safety restraint control module (RCM), connector C500, pin 20, circuit 91-JA10 (BWRD), wiring harness side and ground.

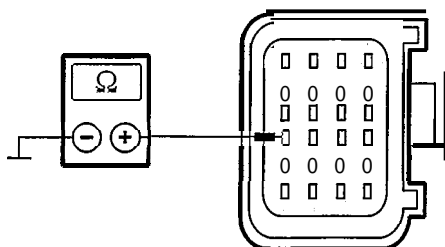
- Is a resistance of less than 2 Ohm registered?

→ **Yes**

- Vehicles built for Japan:
GO to A6.
- All, except vehicles built for Japan:
GO to A7.

→ **No**

LOCATE and REPAIR the break in circuit 91-JA10 (BWRD) between the safety restraint control module (RCM) and ground connection G21 using the Wiring Diagrams. CHECK the operation of the system.

A6: CHECK THE GROUND CONNECTION OF THE SAFETY RESTRAINT CONTROL MODULE (RCM)

E47291

- ☐ Measure the resistance between the safety restraint control module (RCM), connector C500, pin 21, circuit 91-JA47A (BWOG), wiring harness side and ground.

- Is a resistance of less than 2 Ohm registered?

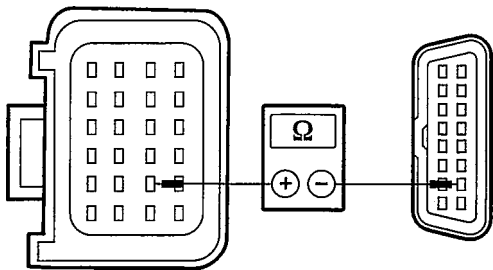
→ **Yes**

GO to A7.

→ **No**

LOCATE and REPAIR the break in the circuit between the safety restraint control module (RCM) and ground connection G21 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A7: CHECK FOR OPEN CIRCUIT BETWEEN THE SAFETY RESTRAINT CONTROL MODULE (RCM) AND THE DATA LINK CONNECTOR (DLC)	
 <p>VFE0033752</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the safety restraint control module (RCM), connector C500, pin 17, circuit 4-EE7 (GYIRD), wiring harness side and the DLC, C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohm registered? → Yes CHECK and if necessary RENEW the safety restraint control module (RCM). CHECK the operation of the system. → No LOCATE and REPAIR the break in circuit 4-EE7 (GYIRD) between the safety restraint control module (RCM) and soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

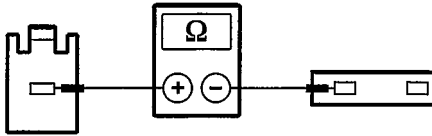
PINPOINT TEST B : ABS MODULE OR ESP MODULE NOT COMMUNICATING **WITH** THE DIAGNOSTIC **UNIT**

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: DETERMINE THE CONDITIONS UNDER WHICH THE FAULT OCCURS	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. Connect the diagnostic tool. Select the generic electronic module (GEM) with the diagnostic tester. <ul style="list-style-type: none"> • Is it possible to establish communication with the GEM? → Yes GO to B2. → No GO to Pinpoint Test I.
B2: CHECK FUSE F5	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

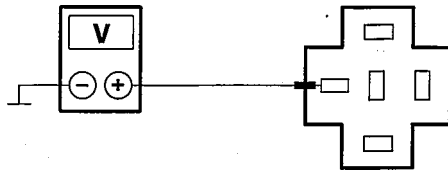
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> CHECK fuse F5 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to B3. <ul style="list-style-type: none"> → No INSTALL A NEW fuse F5 (20 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
B3: CHECK THE VOLTAGE AT FUSE F5	
	<input type="checkbox"/> 1 Connect fuse F5 (CJB). <input type="checkbox"/> 2 Measure the voltage between fuse F5 (20 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to B7. <ul style="list-style-type: none"> → No GO to B4.
B4: CHECK FUSE FH	
	<input type="checkbox"/> 1 Ignition switch in position 0. <input type="checkbox"/> 2 CHECK fuse FH (BJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to B5. <ul style="list-style-type: none"> → No RENEW fuse FH (60 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
B5: CHECK THE VOLTAGE AT FUSE FH	
	<input type="checkbox"/> Connect fuse FH (BJB). <input type="checkbox"/> 2 Measure the voltage between fuse FH (60 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to B6. <ul style="list-style-type: none"> → No REPAIR the voltage supply to fuse FH using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B6: CHECK FOR OPEN CIRCUIT BETWEEN FUSE FH AND FUSE F5	
 <p>E51763</p>	<p>1 Disconnect connector C1001 from BJB.</p> <p><input type="checkbox"/> Measure resistance between BJB, connector C1001, circuit 30S-DB5 (RD), wiring harness side and fuse F5 (CJB), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? <p>→ Yes CHECK the BJB and INSTALL a new one as necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in circuit 30-DB8 (RD) between fuse FH and fuse F5 using the Wiring Diagrams. CHECK the operation of the system.</p>
B7: CHECK FUSE F37	
	<p>1 CHECK fuse F37 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to B8.</p> <p>→ No INSTALL A NEW fuse F37 (3 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
B8: CHECK THE VOLTAGE AT FUSE F37	
	<p>1 Connect fuse F37 (CJB).</p> <p>2 Ignition switch in position II.</p> <p><input type="checkbox"/> Measure the voltage between fuse F37 (3 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes - Vehicles with ABS built up to 0312004 or with electronic stability program (ESP) GO to B15. - Vehicles with ABS built from 0412004 onwards GO to B20.</p> <p>→ No GO to B9.</p>
B9: CHECK THE VOLTAGE AT THE IGNITION RELAY	
	<p><input type="checkbox"/> Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0037103

DETAILS/RESULTS/ACTIONS

- 2** Disconnect ignition relay from socket C328.
- 3** Measure the voltage between the ignition relay, socket C328, pin 3, circuit 30-BB8 (RD), wiring harness side and ground.
 - Does the meter display battery voltage?
 - **Yes**
GO to B12.
 - **No**
GO to B10.

B10: CHECK FUSE FF

- 1** Ignition switch in position 0.
- ☐ CHECK fuse FF (BJB).
 - Is the fuse OK?
 - **Yes**
GO to B11.
 - **No**
RENEW fuse FF (60 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

B11: CHECK THE VOLTAGE AT FUSE FF

- 1** Connect fuse FF (BJB).
- ☒ Measure the voltage between fuse FF (60 A) and ground.
 - Does the meter display battery voltage?
 - **Yes**
LOCATE and REPAIR the break in circuit 30-BB8 (RD) between the ignition relay and fuse FF using the Wiring Diagrams. CHECK the operation of the system.
 - **No**
REPAIR the voltage supply to fuse FF using the Wiring Diagrams. CHECK the operation of the system.

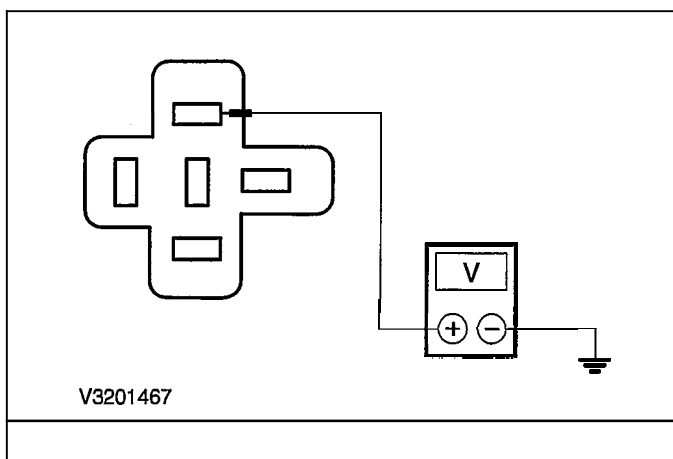
B12: CHECK THE VOLTAGE AT THE IGNITION RELAY

- 1** Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



2 Measure the voltage between the ignition relay, socket C328, pin 1, circuit 15-BB7 (GN/BU), wiring harness side and ground.

• Does the meter display battery voltage?

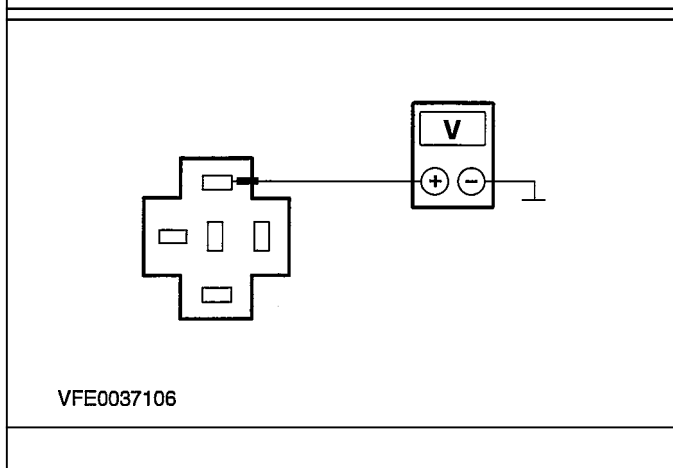
→ **Yes**

GO to B13.

→ **No**

LOCATE and RECTIFY the break in the circuit between the ignition relay and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.

B13: CHECK GROUND CONNECTION AT IGNITION RELAY



1 Measure the resistance between the ignition relay, socket C328, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and ground.

• Is a resistance of less than 2 Ohm registered?

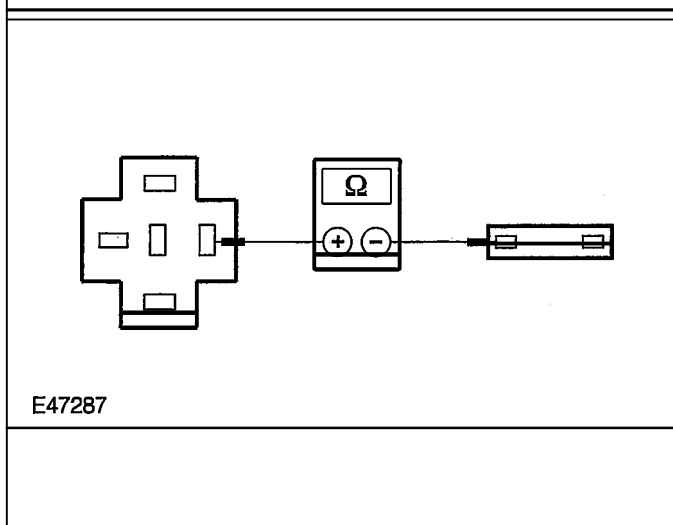
→ **Yes**

GO to B14.

→ **No**

LOCATE and RECTIFY the break in the circuit between the ignition relay and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.

B14: CHECK CIRCUIT BETWEEN THE IGNITION RELAY AND FUSE F37 FOR OPEN CIRCUIT



1 Measure the resistance between the ignition relay, socket C328, pin 5, circuit 15-DB2 (GN/BU), wiring harness side and fuse F37 (CJB).

• Is a resistance of less than 2 Ohm registered?

→ **Yes**

CHECK and if necessary RENEW the ignition relay. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the open circuit between the ignition relay and fuse F37 using the Wiring Diagrams. CHECK the operation of the system.

B15: CHECK THE VOLTAGE AT THE ABS MODULE OR ESP MODULE



1 Ignition switch in position 0.

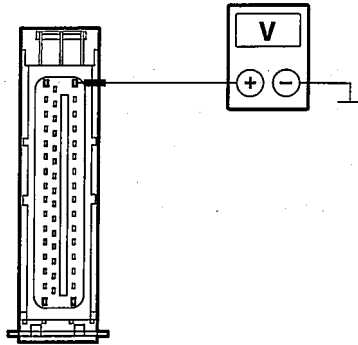
2 Disconnect Connector C303 from ABS module or ESP module.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

VFE0028952



- 3 Measure the voltage between the ABS module or ESP module, connector C303, pin 32, circuit 29-CF6 (OGNE), wiring harness side and ground.

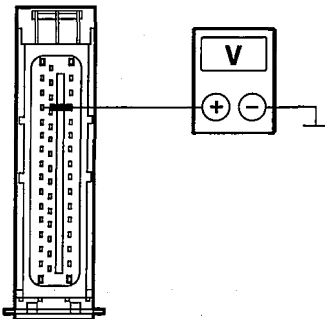
• Does the meter display battery voltage?

→ **Yes**
GO to B16.

→ **No**
LOCATE and REPAIR break in circuit 29-CF6 (OGNE) between the ABS module or ESP module and fuse F5 using the Wiring Diagrams. CHECK the operation of the system.

B16: CHECK THE VOLTAGE AT THE ABS MODULE OR ESP MODULE

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- 1 Ignition switch in position II.

- 2 Measure the voltage between the ABS module or ESP module, connector C303, pin 4, circuit 15-CF6 (GNNE), wiring harness side and ground.

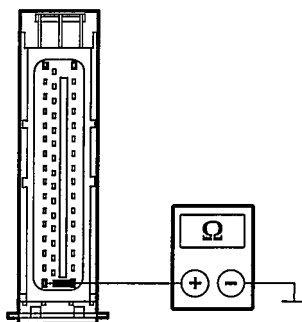
• Does the meter display battery voltage?

→ **Yes**
GO to B17.

→ **No**
LOCATE and REPAIR break in circuit 15-CF6 (GNNE) between the ABS module or ESP module and fuse F37 using the Wiring Diagrams. CHECK the operation of the system.

B17: CHECK THE GROUND CONNECTION OF THE ABS MODULE OR ESP MODULE

VFE0028950



- ☐ Ignition switch in position 0.

- ☐ Measure the resistance between the ABS module or ESP module, connector C303, pin 16, circuit 31-CF6 (BK), wiring harness side and ground;

• Is a resistance of less than 2 Ohm registered?

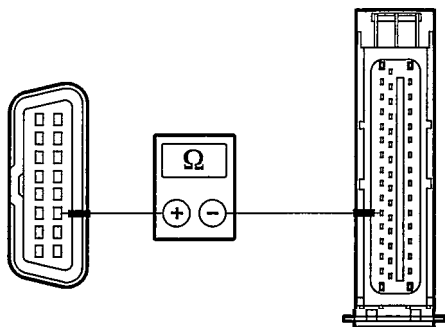
→ **Yes**
GO to B18.

→ **No**
LOCATE and REPAIR the break in the circuit between the ABS module or ESP module and ground connection G23 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

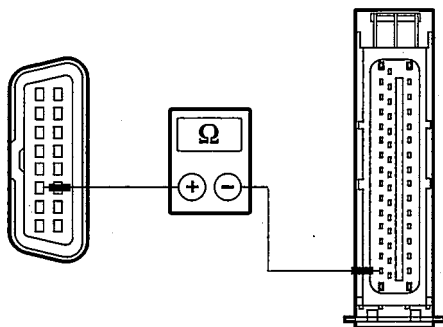
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B18: CHECK FOR OPEN CIRCUIT BETWEEN THE ABS MODULE OR ESP MODULE AND THE DLC

VFE0033604

- 1 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and the ABS module or ESP module, connector C303, pin 11, circuit 4-EC9 (GY), wiring harness side.



VFE0033607

- 2 Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and the ABS module or ESP module, connector C303, pin 15, circuit 5-EC9 (BU), wiring harness side.

- Is a resistance of less than 2 Ohms measured in both cases?

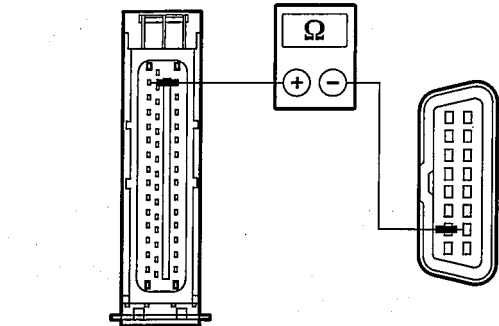
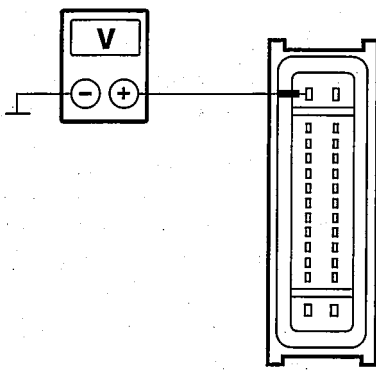
→ **Yes**

GO to B19.

→ **No**

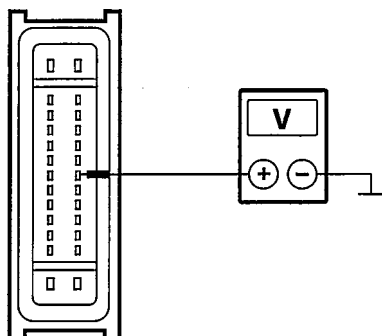
LOCATE and REPAIR the break in the relevant circuit between the ABS module or ESP module and DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B19: CHECK FOR OPEN CIRCUIT BETWEEN THE ABS MODULE OR ESP MODULE AND THE DATA LINK CONNECTOR (DLC)	
 <p>VFE0033753</p>	<p>1 Measure the resistance between the ABS module or ESP module, connector C303, pin 2, circuit 4-EE6 (GY), wiring harness side and DLC, C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? <p>→ Yes CHECK and if necessary RENEW the ABS module or ESP module. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the ABS module or ESP module and soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.</p>
B20: CHECK THE VOLTAGE AT THE ABS MODULE	
 <p>E51764</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Disconnect connector C304 from ABS module.</p> <p>3 Measure the voltage between the ABS module, connector C304, pin 1, circuit 29-CF6 (OGNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to B21.</p> <p>→ No LOCATE and REPAIR the break in circuit 29-CF6 (OGNE) between the ABS module and fuse F5 using the Wiring Diagrams. CHECK the operation of the system.</p>
B21: CHECK THE VOLTAGE AT THE ABS MODULE	
	<p><input type="checkbox"/> Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

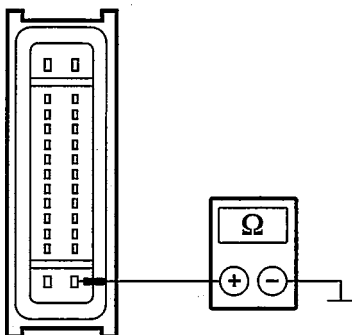


E51765

DETAILS/RESULTS/ACTIONS

- 2 Measure the voltage between the ABS module, connector C304, pin 20, circuit 15-CF6 (GNNE), wiring harness side and ground.
- Does the meter display battery voltage?
 - **Yes**
GO to B22.
 - **No**
LOCATE and REPAIR the break in circuit 15-CF6 (GNNE) between the ABS module and fuse F37 using the Wiring Diagrams. CHECK the operation of the system.

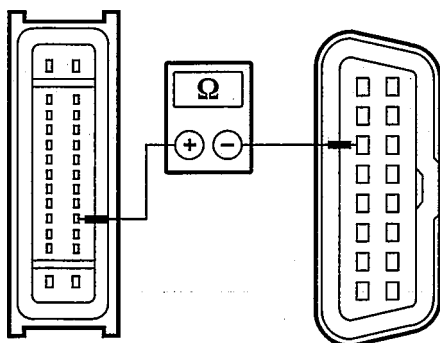
B22: CHECK THE GROUND CONNECTION OF THE ABS MODULE



E51766

- 1 Ignition switch in position 0.
- 2 Measure the resistance between the ABS module, connector C304, pin 26, circuit 31-CF6 (BK), wiring harness side and ground.
- Is a resistance of less than 2 Ohm registered?
 - **Yes**
GO to B23.
 - **No**
LOCATE and REPAIR the break in the circuit between the ABS module and ground connection G23 using the wiring diagrams. CHECK the operation of the system.

B23: CHECK FOR OPEN CIRCUIT BETWEEN THE ABS MODULE AND THE DLC

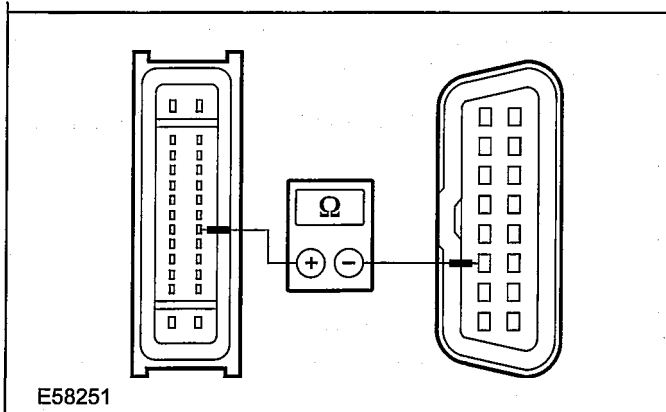


E58250

- 1 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and the ABS module, connector C304, pin 23, circuit 4-EC9 (GY), wiring harness side.

DIAGNOSIS AND TESTING

TEST CONDITIONS



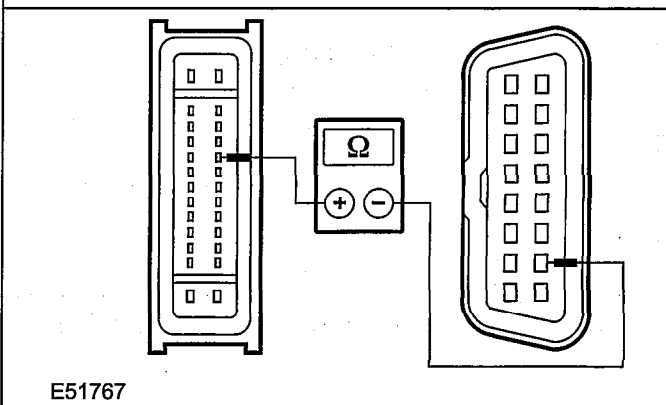
DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and the ABS module, connector C304, pin 21, circuit 5-EC9 (BU), wiring harness side.

- Is a resistance of less than 2 Ohms measured in both cases?

→ **Yes**
GO to B24.

→ **No**
LOCATE and REPAIR the break in the corresponding circuit between the ABS module and the DLC using the Wiring Diagrams. CHECK the operation of the system.

B24: CHECK THE CIRCUIT BETWEEN THE ABS MODULE AND THE DATA LINK CONNECTOR (DLC) FOR OPEN CIRCUIT


- 1** Measure the resistance between the ABS module, connector C304, pin 18, circuit 4-EE6 (GY), wiring harness side and DLC, connector C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**
CHECK the ABS module and if necessary INSTALL a new one. CHECK the operation of the system.

→ **No**
LOCATE and REPAIR the break in the circuit between the ABS module and soldered connection S270 using the wiring diagrams. CHECK the operation of the system.

PINPOINT TEST C : POWER STEERING PUMP MODULE NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

C1: DETERMINE THE CONDITIONS UNDER WHICH THE FAULT OCCURS

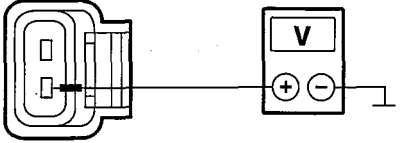
- ☐ Ignition switch in position 0.

- 2** Connect the diagnostic tool.

DIAGNOSIS AND TESTING

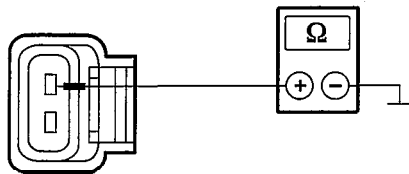
TEST CONDITIONS	DETAILS RESULTS ACTIONS
	<p>3 Select the generic electronic module (GEM) with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the GEM? <p>→ Yes GO to C2.</p> <p>→ No GO to Pinpoint Test J.</p>
C2: TEST FUSE FA	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 CHECK Fuse FA (BJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to C3.</p> <p>→ No RENEW fuse FA (80 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
C3: TEST VOLTAGE AT FUSE FA	
	<p>1 Connect Fuse FA (BJB).</p> <p>2 Measure the voltage between fuse FA (80A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to C4.</p> <p>→ No REPAIR the voltage supply to fuse FA with the aid of the Wiring Diagrams. CHECK the operation of the system.</p>
C4: CHECK THE VOLTAGE AT THE POWER STEERING PUMP MODULE	
	<p>1 Disconnect Connector C280 from the power steering pump module.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS RESULTS ACTIONS
 <p>VFE0037902</p>	<p><input type="checkbox"/> Measure the voltage between the power steering pump module, connector C280, pin 1, circuit 30-CE7 (RD), wiring harness side and ground.</p> <p>* Is battery voltage measured?</p> <p>→ Yes GO to C5.</p> <p>→ No LOCATE and REPAIR the break in circuit 30-CE7 (RD), between the power steering pump module and fuse FA using the Wiring Diagrams. CHECK the operation of the system.</p>
C5: CHECK THE VOLTAGE AT THE POWER STEERING PUMP MODULE	
	<p>1 Disconnect Connector C281 from the power steering pump module.</p>
	<p>2 Ignition switch in position II.</p>
	<p>3 Measure the voltage between the power steering pump module, connector C281, pin 1, circuit 15-CE7 (GNIBU), wiring harness side and ground.</p> <p>• Is battery voltage measured?</p> <p>→ Yes GO to C6.</p> <p>→ No LOCATE and REPAIR the break in circuit 15-CE7 (GNIBU), between the power steering pump module and soldered connection S138 using the Wiring Diagrams. CHECK the operation of the system.</p>
C6: CHECK THE GROUND CONNECTION OF THE POWER STEERING PUMP MODULE	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0037904

DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the power steering pump module, connector C280, pin 2, circuit 31-CE7 (BK), wiring harness side and ground.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to C7.

→ **No**

LOCATE and REPAIR the break in circuit 31-CE7 (BK), between the power steering pump module and ground connection G32 using the Wiring Diagrams. CHECK the operation of the system.

C7: CHECK FOR OPEN CIRCUIT BETWEEN THE POWER STEERING PUMP MODULE AND THE DATA LINK CONNECTOR (DLC)

- 1 Measure the resistance between the power steering pump module, connector C281, pin 3, circuit 4-EC8B (GY/VT), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to C8.

→ **No**

LOCATE and REPAIR the break in circuit 4-EC8B (GY/VT) between the power steering pump module and soldered connection S130 using the Wiring Diagrams. CHECK the operation of the system.

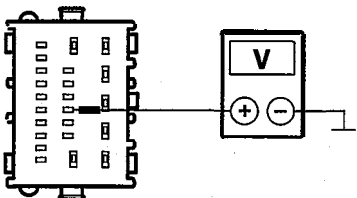
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C8: CHECK FOR OPEN CIRCUIT BETWEEN THE POWER STEERING PUMP MODULE AND THE DATA LINK CONNECTOR (DLC)	
	<p>1 Measure the resistance between the power steering pump module, connector C281, pin 2, circuit 5-EC8B (BU/WH), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK and if necessary RENEW the power steering pump module. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in circuit 5-EC8B (BU/WH) between the power steering pump module and soldered connection S131 using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST D : GENERIC ELECTRONIC MODULE (GEM) NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER

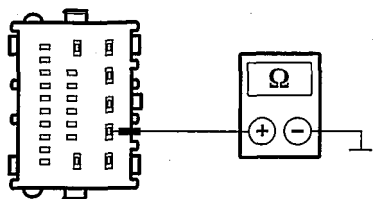
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D1: DETERMINE THE FAULT CONDITION	
	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Connect the diagnostic tool.</p> <p>3 Select the safety restraint control module (RCM) with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the safety restraint control module (RCM)? <p>→ Yes GO to D2.</p> <p>→ No GO to Pinpoint Test I.</p>
D2: CHECK FUSE F38	
	<p><input type="checkbox"/> Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>2 CHECK fuse F38 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to D3.</p> <p>→ No INSTALL A NEW fuse F38 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
D3: CHECK THE VOLTAGE AT FUSE F38	
	<p>1 Connect fuse F38 (CJB).</p> <p>2 Ignition switch in position II.</p> <p>3 Measure the voltage between fuse F38 (7.5 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to D4.</p> <p>→ No REPAIR the voltage supply to fuse F38 using the Wiring Diagrams. CHECK the operation of the system.</p>
D4: CHECK THE VOLTAGE AT THE GEM	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C319 (white) from GEM.</p> <p>Ignition switch in position II.</p>
 <p>VFE0028972</p>	<p>3 Measure the voltage between the GEM, connector C319 (white), pin 10, circuit 15-DK20 (GNIOG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to D5.</p> <p>→ No LOCATE and REPAIR the break in circuit 15-DK20 (GNIOG) between the GEM and soldered connection S3 using the Wiring Diagrams. CHECK the operation of the system.</p>
D5: TEST THE GEM GROUND CONNECTION	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C316 (black) from GEM.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

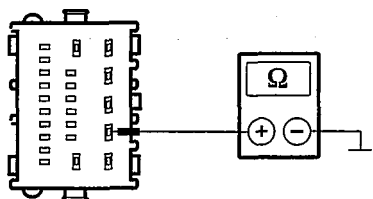


VFE0028971

DETAILS/RESULTS/ACTIONS

- 3** Measure the resistance between the GEM, connector C316 (black), pin 2, circuit 31-DK20 (BK), wiring harness side and ground.
- Is a resistance of less than 2 Ohm registered?
 - **Yes**
GO to D6.
 - **No**
LOCATE and REPAIR the break in circuit 31-DK20 (BK) between the GEM and soldered connection S15 using the Wiring Diagrams. CHECK the operation of the system.

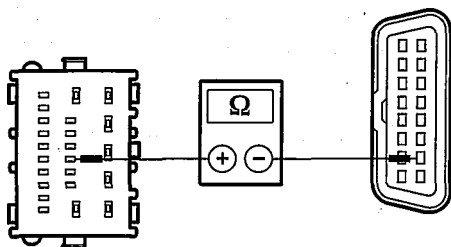
D6: TEST THE GEM GROUND CONNECTION



VFE0028975

- 1** Disconnect connector C320 (brown) from GEM.
- ☐ Measure the resistance between the GEM, connector C320 (brown), pin 2, circuit 91-DK20 (BWRD), wiring harness side and ground.
- Is a resistance of less than 2 Ohm registered?
 - **Yes**
GO to D7.
 - **No**
LOCATE and RECTIFY the break in circuit 91-DK20 (BWRD) between the GEM and ground connection G14 using the Wiring Diagrams. CHECK the operation of the system.

D7: CHECK FOR OPEN CIRCUIT BETWEEN THE GEM AND THE DLC.



VFE0033612

- 1** Measure the resistance between GEM, connector C320 (brown), pin 10, circuit 4-EE11 (GY/WH), wiring harness side and DLC, C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side.
- Is a resistance of less than 2 Ohm registered?
 - **Yes**
TEST the GEM and RENEW as necessary. CHECK the operation of the system.
 - **No**
LOCATE and REPAIR the break in the circuit between the GEM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

PINPOINT TEST E : POWERTRAIN CONTROL MODULE (PCM) NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER

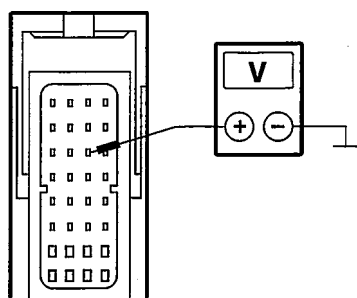
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: DETERMINE THE CONDITIONS UNDER WHICH THE FAULT OCCURS	
	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> 2 Connect the diagnostic tool.
	<input type="checkbox"/> 3 Select the instrument cluster with the diagnostic tester. <ul style="list-style-type: none"> Is it possible to establish communication with the instrument cluster? → Yes GO to E2. → No GO to Pinpoint Test J.
E2: CHECK FUSE F16	
	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> 2 CHECK fuse F16 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to E3. → No INSTALL A NEW fuse F16 (3 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
E3: CHECK THE VOLTAGE AT FUSE F16	
	<input type="checkbox"/> Connect fuse F16 (CJB).
	<input type="checkbox"/> 2 Measure the voltage between fuse F16 (3 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to E4. → No REPAIR the voltage supply to fuse F16 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E4: CHECK FUSE F12	
	<p>1 CHECK fuse F12 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to E5.</p> <p>→ No INSTALL A NEW fuse F12 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
E5: CHECK THE VOLTAGE AT FUSE F12	
	<p>1 Connect fuse F12 (CJB).</p> <p><input type="checkbox"/> Ignition switch in position II.</p> <p><input type="checkbox"/> Measure the voltage between fuse F12 (15 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine: GO to E14. Vehicles with 2.0L engine: GO to E15. Vehicles with diesel engine: GO to E24. <p>→ No</p> <ul style="list-style-type: none"> Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine: GO to E9. Vehicles with 2.0L engine: GO to E8. Vehicles with 1.6L diesel engine: GO to E7. Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): GO to E6. Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR): GO to E10.
E6: CHECK THE VOLTAGE AT THE PCM	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Disconnect connector C370 from the PCM.</p> <p>3 Ignition switch in position II.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



E57723

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between the PCM, connector C370, pin C3, circuit 15-RE8 (GNNE), wiring harness side and ground.

• Does the meter display battery voltage?

→ **Yes**

GO to E26.

→ **No**

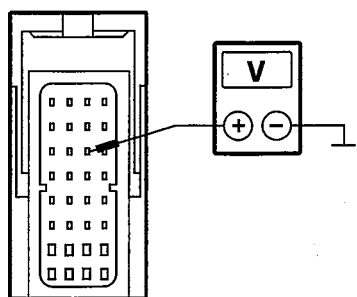
LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.

E7: CHECK THE VOLTAGE AT THE PCM

- 1** Ignition switch in position 0.

- ☐ Disconnect connector C384 from PCM.

- 3** Ignition switch in position II.



E57723

- 4** Measure the voltage between the PCM, connector C384, pin C3, circuit 15-RE8C (GNNE), wiring harness side and ground.

• Is battery voltage measured?

→ **Yes**

GO to E26.

→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.

E8: CHECK THE VOLTAGE AT THE PCM

- 1** Ignition switch in position 0.

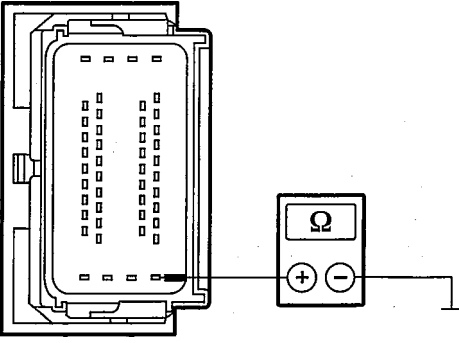
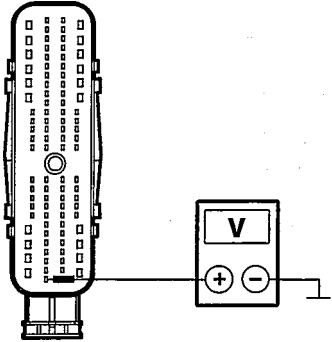
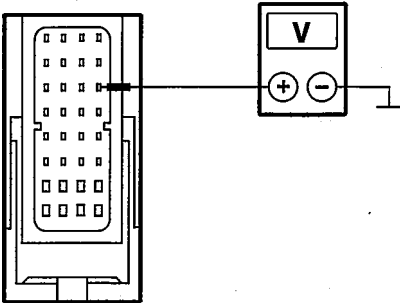
- 2** Disconnect connector C380 from PCM.

- 3** Ignition switch in position II.

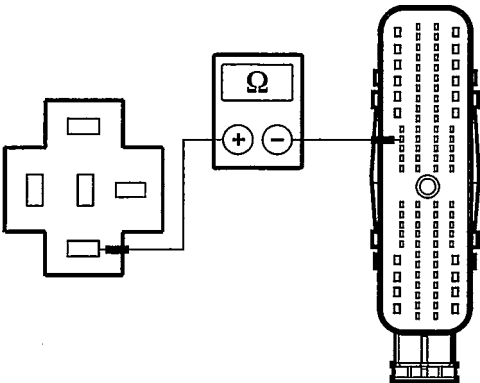
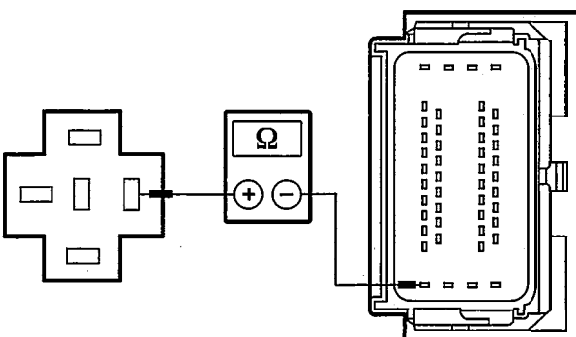
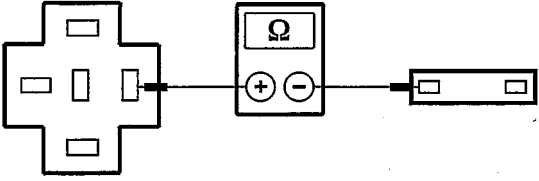
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

 <p>E57706</p>	<p>4 Measure the voltage between the PCM, connector C380, pin 46, circuit 15-RE8 (GNNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to E26.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>E9: CHECK THE VOLTAGE AT THE PCM</p>	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C343 from PCM.</p> <p>3 Ignition switch in position II.</p>
 <p>VFE0028931</p>	<p><input type="checkbox"/> Measure the voltage between the PCM, connector C343, pin F21, circuit 15-RE8 (GNNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to E26.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>E10: CHECK THE VOLTAGE AT THE PCM</p>	
	<p><input type="checkbox"/> Disconnect connector C375 from PCM.</p> <p><input type="checkbox"/> Ignition switch in position II.</p>
 <p>E57718</p>	<p>3 Measure the voltage between the PCM, connector C375, pin C3, circuit 15-RE8 (GNNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to E26.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

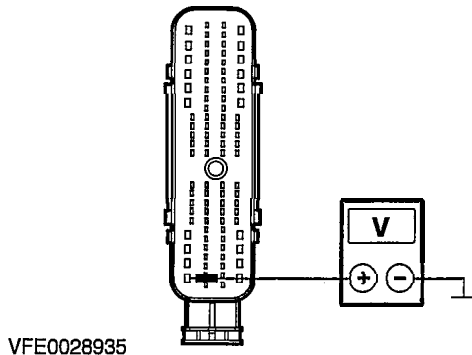
TEST CONDITIONS	DETAILS RESULTS ACTIONS
<p>E11: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM</p>  <p>E47286</p>	<p>1 Disconnect connector C343 from the PCM.</p> <p>2 Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BKIBU), wiring harness side and PCM, connector C343, pin M8, circuit 91S-RH9 (BWBU), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? → Yes GO to E13. → No LOCATE and REPAIR the break in circuit 91S-RH9 (BWBU) between the PCM module relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.
<p>E12: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM</p>  <p>E57705</p>	<p><input type="checkbox"/> Disconnect connector C380 from PCM.</p> <p>2 Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C380, pin 35, circuit 91S-RH9 (BWBU), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? → Yes GO to E13. → No LOCATE and REPAIR the break in the circuit between the PCM module relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.
<p>E13: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND FUSE F12</p>  <p>E47287</p>	<p>1 Measure the resistance between the PCM module relay, socket C420, Pin 5, circuit 15S-DB9 (GN/RD), wiring harness side and fuse F12 (CJB), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? → Yes GO to E32. → No LOCATE and REPAIR the open circuit between the PCM module relay and fuse F12 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

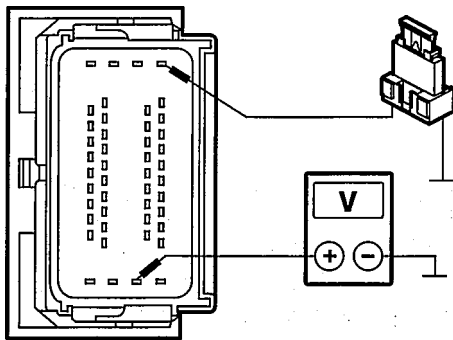
E14: CHECK THE VOLTAGE AT THE PCM



- 1 Ignition switch in position 0.
- 2 Disconnect connector C343 from the PCM.

- 3 Measure the voltage between the PCM, connector C343, pin F9, circuit 29-RE8 (OGNE), wiring harness side and ground.
 - Does the meter display battery voltage?
 - **Yes**
GO to E20.
 - **No**
LOCATE and REPAIR the break in circuit 29-RE8 (OGNE) between PCM and fuse F16 using the Wiring Diagrams. CHECK the operation of the system.

E15: CHECK THE VOLTAGE AT THE PCM



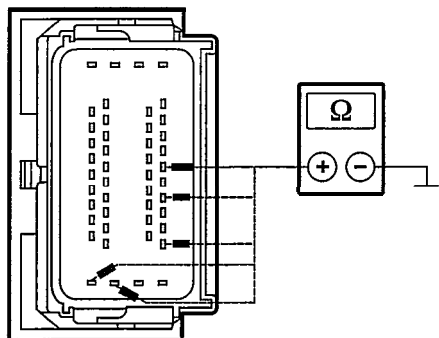
- ☐ Ignition switch in position 0.
- 2 Use a fused test lead (1 A) at the PCM, connector C380, pin 35, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground.
- 3 Measure the voltage between the PCM, connector C380, pin 34, circuit 15s-RE8 (GNNE), wiring harness side and ground.
 - Does the meter display battery voltage?
 - **Yes**
GO to E16.
 - **No**
LOCATE and REPAIR the open circuit between the PCM and fuse F12 using the Wiring Diagrams. CHECK the operation of the system.

E16: CHECK THE GROUND CONNECTION OF THE PCM

- 1 Ignition switch in position 0.
- 2 Measure the resistance between the PCM, connector C380, pin 11, circuit 91-RE8A (BK/YE), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E57708

DETAILS/RESULTS/ACTIONS

- 3** Measure the resistance between the PCM, connector C380, pin 23, circuit 91-RE8B (BWE), wiring harness side and ground.

- 4** Measure the resistance between the PCM, connector C380, pin 40, circuit 91-RE8C (BWE), wiring harness side and ground.

- 5** Measure the resistance between the PCM, connector C380, pin 42, circuit 91-RE8D (BWE), wiring harness side and ground.

- ☐ Measure the resistance between the PCM, connector C380, pin 44, circuit 91-RE8E (BK/YE), wiring harness side and ground.

- Is a resistance of less than 2 Ohms measured in all of the cases?

→ **Yes**

GO to E17.

→ **No**

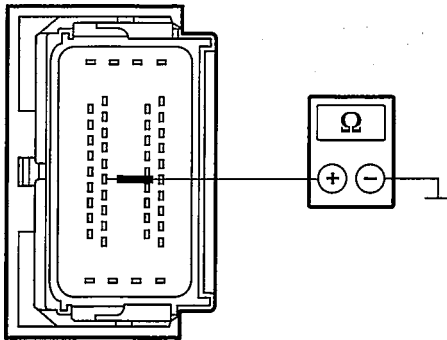
- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S301 using the Wiring Diagrams. CHECK the operation of the system.
- If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the affected circuit between soldered connection S301 and ground connection G1 using the wiring diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

E17: CHECK THE GROUND CONNECTION OF THE PCM



E57709

- ☐ Measure the resistance between the PCM, connector C380, pin 10, circuit 31-RE8 (BK), wiring harness side and ground.
- Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to E18.
 - **No**
LOCATE and REPAIR the break in the circuit between the PCM and ground connection G22 using the Wiring Diagrams. CHECK the operation of the system.

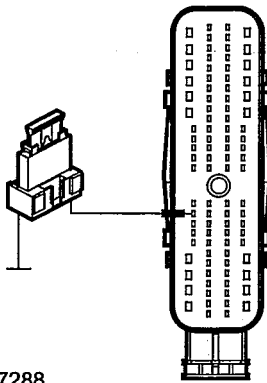
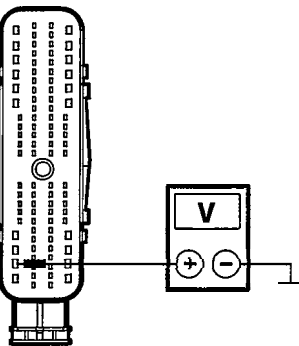
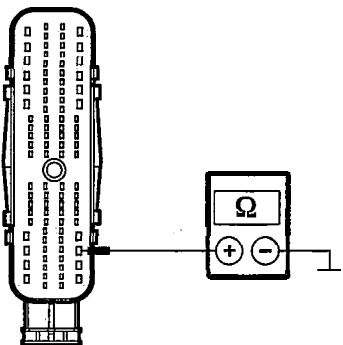
E18: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

- 1** Measure the resistance between the PCM, connector C380, pin 41, circuit 4-EC7 (GYRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYRD), wiring harness side.
- Is a resistance of less than 2 Ohm registered?
 - **Yes**
GO to E19.
 - **No**
LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

E19: CHECK CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

- 1** Measure the resistance between the PCM, connector C380, pin 30, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.
- Is a resistance of less than 2 Ohm registered?
 - **Yes**
CHECK the PCM and RENEW if necessary. CHECK the operation of the system.
 - **No**
LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

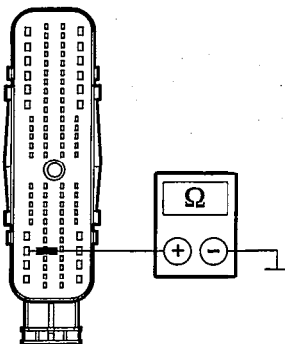
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E20: CHECK THE VOLTAGE AT THE PCM	
 <p>E47288</p>	<ol style="list-style-type: none"> 1 Use a fused test lead (1 A) at the PCM, connector C343, pin M8, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground.
 <p>VFE0028934</p>	<ol style="list-style-type: none"> 2 Measure the voltage between the PCM, connector C343, pin F8, circuit 15s-RE8 (GNNE), wiring harness side and ground. <ul style="list-style-type: none"> • Does the meter display battery voltage? → Yes GO to E21. → No LOCATE and REPAIR the open circuit between the PCM and fuse F12 using the Wiring Diagrams. CHECK the operation of the system.
E21: CHECK THE GROUND CONNECTION OF THE PCM	
 <p>VFE0028932</p>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Measure the resistance between the PCM, connector C343, pin F40, circuit 91-RE8A (BK/YE), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS

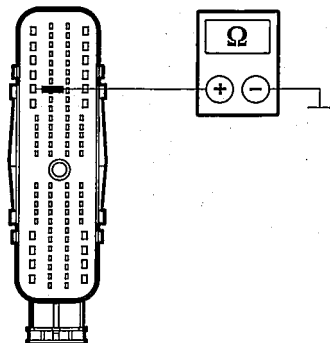
DETAILS/RESULTS/ACTIONS

VFE0028933



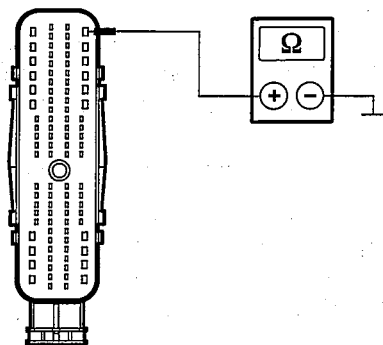
- 3** Measure the resistance between the PCM, connector C343, pin F7, circuit 91-RE8B (BWE), wiring harness side and ground.

VFE0028929



- ☐ Measure the resistance between the PCM, connector C343, pin M5, circuit 91-RE8C (BWE), wiring harness side and ground.

VFE0028928



- 5** Measure the resistance between the PCM, connector C343, pin M42, circuit 91-RE8D (BWE), wiring harness side and ground.
- Is a resistance of less than 2 Ohms measured in all of the cases?
 - **Yes**
GO to E22.
 - **No**
 - If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.
 - If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the circuit between soldered connection S109 and ground connection G1 using the Wiring Diagrams. CHECK the operation of the system.

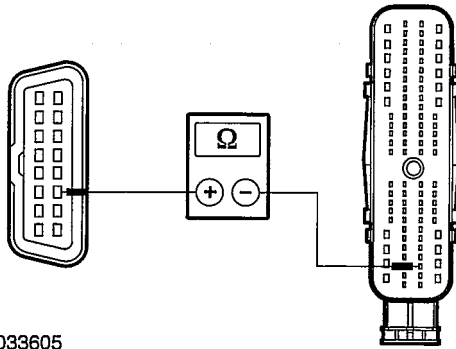
E22: CHECK CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

- 1** Disconnect connector C343 from the PCM.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



- 2 Measure the resistance between the PCM, connector C343, pin F31, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

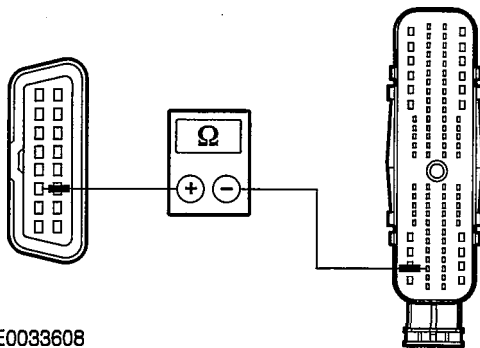
→ **Yes**

GO to E23.

→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

E23: CHECK CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT



- 1 Measure the resistance between the PCM, connector C343, pin F19, circuit 5-EC7 (BU/RD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**

CHECK the PCM and RENEW if necessary. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

E24: CHECK FUSE F13

- Ignition switch in position 0.

- 2 CHECK fuse F13 (CJB).

- Is the fuse OK?

→ **Yes**

GO to E25.

→ **No**

INSTALL A NEW fuse F13 (20 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

E25: CHECK THE VOLTAGE AT FUSE F13

- ☐ Connect fuse F13 (CJB).

- 2 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

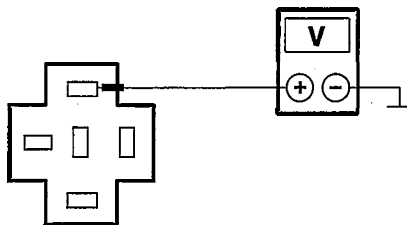
DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between fuse F13 (20 A) and ground.
- Does the meter display battery voltage?
- **Yes**
- Vehicles with 1.6L diesel engine:
GO to E34.
 - Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR):
GO to E33.
 - Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR):
GO to E38.
- **No**
GO to E26.

E26: CHECK THE VOLTAGE AT THE PCM MODULE RELAY

Ignition switch in position 0.

Disconnect PCM module relay from socket C420.

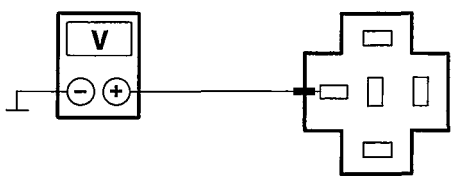
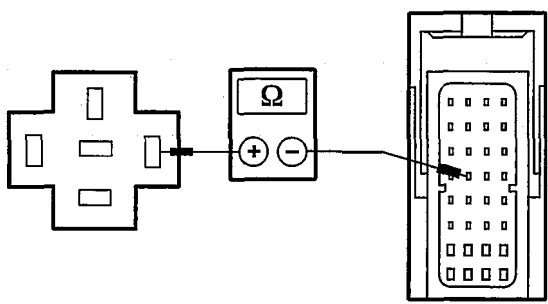


VFE0037106

Measure the voltage between the PCM module relay, socket C420, pin 1, circuit 29-RH9 (OGIBU), wiring harness side and ground.

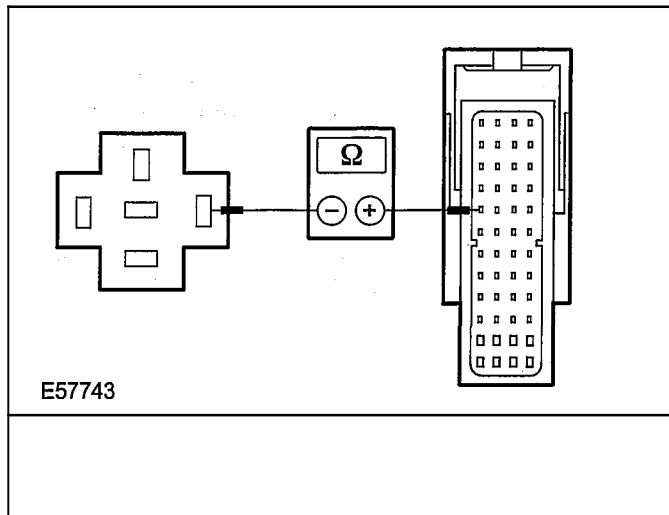
- Does the meter display battery voltage?
- **Yes**
GO to E27.
- **No**
LOCATE and REPAIR the break in circuit 29-RE9 (OGIBU) between the PCM module relay and fuse F16 using the Wiring Diagrams.
CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>E27: CHECK THE VOLTAGE AT THE PCM MODULE RELAY</p>  <p>VFE0037103</p>	<p><input type="checkbox"/> Measure the voltage between the PCM module relay, socket C420, pin 3, circuit 30-RH10 (RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles with 1.6L diesel engine: GO to E29. Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): GO to E30. Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR): GO to E28. Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine: GO to E11. Vehicles with 2.0L petrol engine: GO to E12. <p>→ No LOCATE and REPAIR the open circuit between the PCM module relay and fuse FB using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>E28: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM</p>  <p>E57710</p>	<p><input type="checkbox"/> Disconnect connector C377 from PCM.</p> <p><input type="checkbox"/> Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C377, pin D2, circuit 91S-RH9 (BWBU), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to E31.</p> <p>→ No LOCATE and REPAIR the break in circuit 91S-RH9 (BWBU) between the PCM module relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>E29: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM</p>	<p><input type="checkbox"/> 1 Disconnect connector C383 from PCM.</p>

DIAGNOSIS AND TESTING

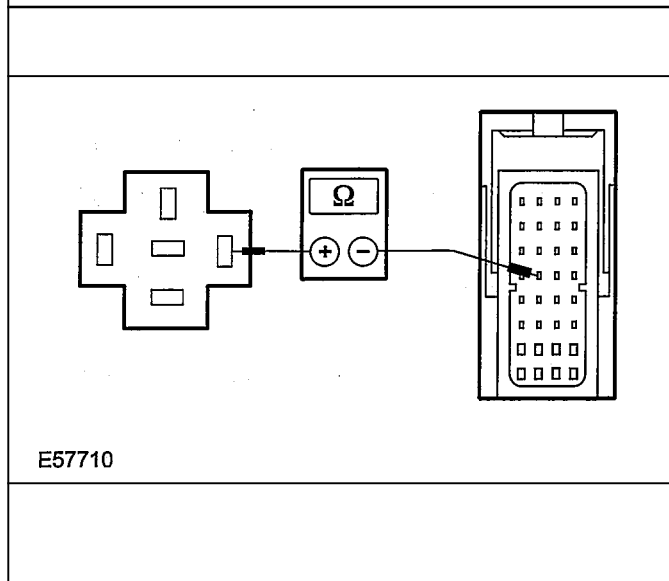
TEST CONDITIONS



DETAILS RESULTS ACTIONS

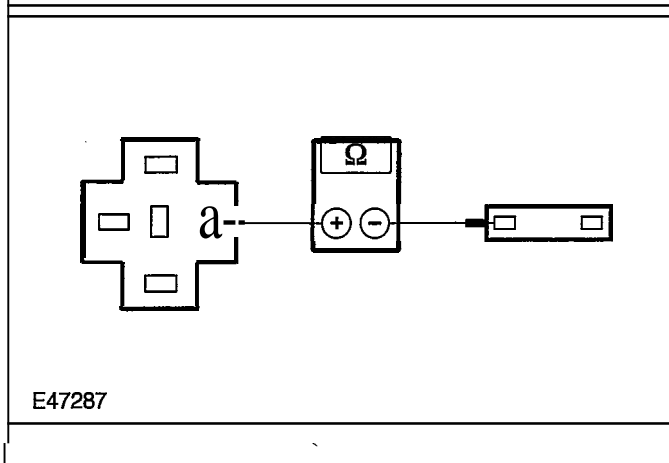
- 2 Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C383, pin E1, circuit 91S-RH9 (BWBU), wiring harness side.
 - Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to E31.
 - **No**
LOCATE and REPAIR the break in circuit 91S-RH9 (BWBU) between the PCM module relay and the PCM using the Wiring Diagrams.
CHECK the operation of the system.

E30: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM



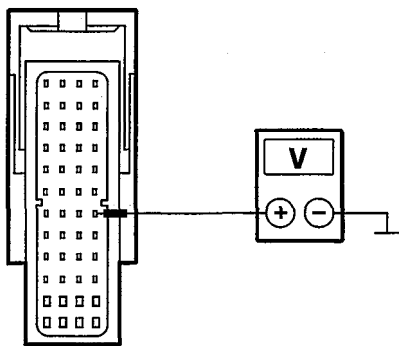
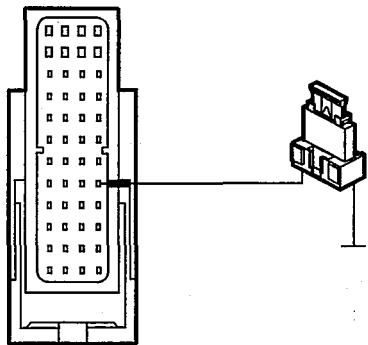
- 1 Disconnect connector C372 from the PCM.
- 2 Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C372, pin D2, circuit 91S-RH9 (BWBU), wiring harness side.
 - Is a resistance of less than 2 Ohm registered?
 - **Yes**
GO to E31.
 - **No**
LOCATE and REPAIR the break in circuit 91S-RH9 (BWBU) between the PCM module relay and the PCM using the Wiring Diagrams.
CHECK the operation of the system.

E31: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND FUSE F13



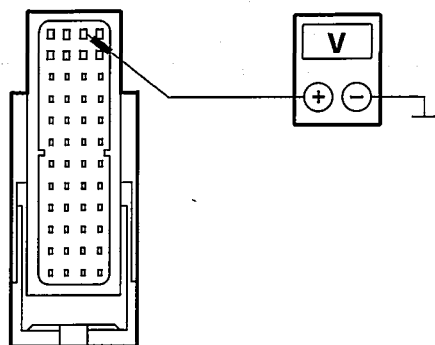
- 1 Measure the resistance between the PCM module relay, socket C420, Pin 5, circuit 15S-DB9 (GN/RD), wiring harness side and fuse F13 (CJB), wiring harness side.
 - Is a resistance of less than 2 Ohm registered?
 - **Yes**
GO to E32.
 - **No**
CHECK CJB and RENEW as necessary.
CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E32: CHECK THE PCM MODULE RELAY	<ol style="list-style-type: none"> 1 Check the PCM module relay according to the component test at the end of this section. <ul style="list-style-type: none"> • Is the PCM module relay OK? → Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system. → No RENEW the PCM module relay. CHECK the operation of the system.
E33: CHECK THE VOLTAGE AT THE PCM <div>  </div> <div>E57744</div>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect connector C371 from the PCM. 3 Measure the voltage between the PCM, connector C371, pin G4, circuit 29-RE8 (OGNE), wiring harness side and ground. <ul style="list-style-type: none"> • Does the meter display battery voltage? → Yes GO to E43. → No LOCATE and REPAIR the break in circuit 29-RE8 (OGNE) between PCM and fuse F16 using the Wiring Diagrams. CHECK the operation of the system.
E34: CHECK THE VOLTAGE AT THE PCM <div>  </div> <div>E57711</div>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect connector C383 from PCM. 3 Use a fused test lead (1 A) at the PCM, connector C383, pin E1, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E57712

DETAILS/RESULTS/ACTIONS

- 4 Measure the voltage between the PCM, connector C383, pin M2, circuit 15S-RE8A (GN/NE), wiring harness side and ground.

- 5 Measure the voltage between the PCM, connector C384, pin G1, circuit 15S-RE8B (GN/YE), wiring harness side and ground.

- Is battery voltage measured in both cases?

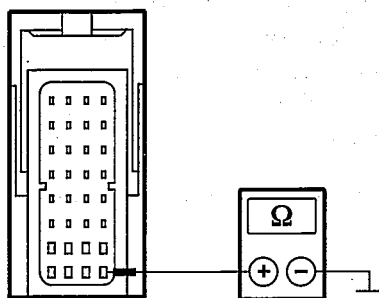
→ **Yes**
GO to E35.

→ **No**

- If battery voltage is not measured during one measurement:
LOCATE and RECTIFY the break in the corresponding circuit between the PCM and solder point S111 with the aid of the Wiring Diagrams. CHECK the operation of the system.
- If battery voltage is not measured during both measurements:
LOCATE and REPAIR the break in circuit 15S-RN3 (GN/BU) between soldered connection S111 and fuse F13 using the Wiring Diagrams. CHECK the operation of the system.

E57713

E35: CHECK THE GROUND CONNECTION OF THE PCM



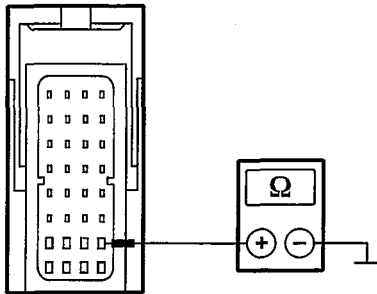
E57714

- 1 Measure the resistance between the PCM, connector C384, pin H4, circuit 91-RE8C (BK/YE), wiring harness side and ground.

DIAGNOSIS AND TESTING

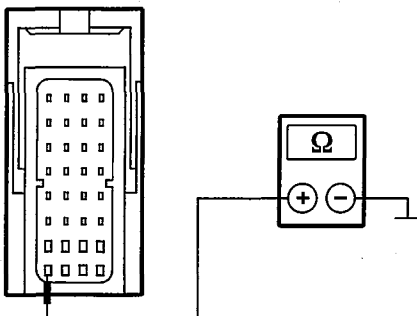
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



E57715

- 2 Measure the resistance between the PCM, connector C384, pin G4, circuit 91-RE8A (BK/YE), wiring harness side and ground.



E57716

- 3 Measure the resistance between the PCM, connector C384, pin H1, circuit 91-RE8B (BK/YE), wiring harness side and ground.

- Is a resistance of less than 2 Ohms measured in all of the cases?

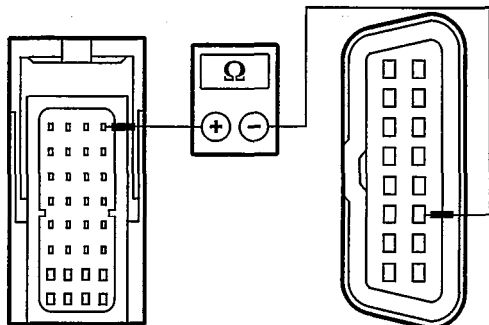
→ **Yes**

GO to E36.

→ **No**

- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.

- If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the affected circuit between soldered connection S109 and ground connection G1 using the wiring diagrams. CHECK the operation of the system.

E36: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

E58252

- 1 Measure the resistance between the PCM, connector C384, pin A4, circuit 4-EC7 (GY/RD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to E37.

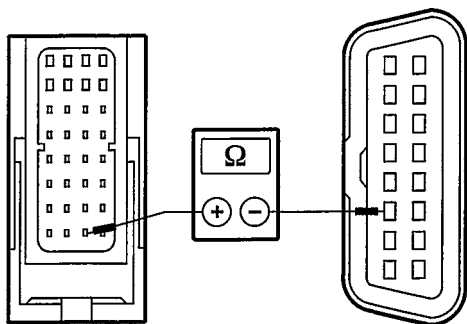
→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

E37: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

E58253

- 1 Measure the resistance between the PCM, connector C384, pin A3, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.

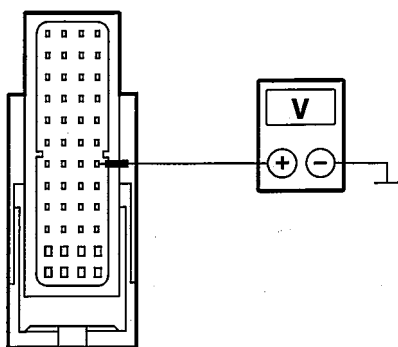
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK the PCM and RENEW if necessary.
CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

E38: CHECK THE VOLTAGE AT THE PCM

E57717

- 1 Ignition switch in position 0.

- ☐ Disconnect connector C376 from PCM.

- ☐ Measure the voltage between the PCM, connector C376, pin G4, circuit 29-RE8 (OGNE), wiring harness side and ground.

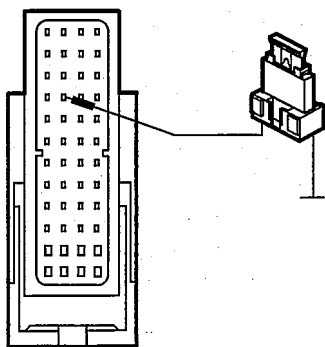
Is battery voltage measured?

→ **Yes**

GO to E39.

→ **No**

LOCATE and REPAIR the break in circuit 29-RE8 (OGNE) between PCM and fuse F16 using the Wiring Diagrams. CHECK the operation of the system.

E39: CHECK THE VOLTAGE AT THE PCM

E57719

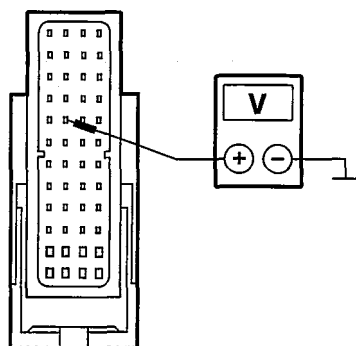
- Disconnect connector C377 from PCM.

Use a fused test lead (1 A) at the PCM, connector C377, pin D2, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground.

DIAGNOSIS AND TESTING

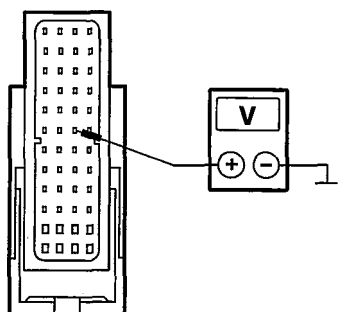
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



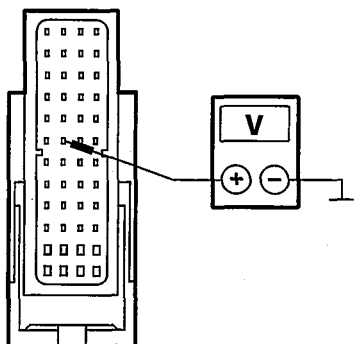
E57720

- ☐ Measure the voltage between the PCM, connector C377, pin E3, circuit 15S-RE8A (GNNE), wiring harness side and ground.



E57722

- ☐ Measure the voltage between the PCM, connector C377, pin F3, circuit 15S-RE8B (GNNE), wiring harness side and ground.



E57721

- 5** Measure the voltage between the PCM, connector C377, pin F2, circuit 15S-RE8C (GNNE), wiring harness side and ground.
- Is battery voltage measured in all cases?
 - **Yes**
GO to E40.
 - **No**
 - If battery voltage is not measured during a measurement:
LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S108 using the Wiring Diagrams. CHECK the operation of the system.
 - If battery voltage is not measured during all measurements:
LOCATE and REPAIR the break in circuit 15S-RN3 (GN/BU) between soldered connection S108 and fuse F13 using the Wiring Diagrams. CHECK the operation of the system.

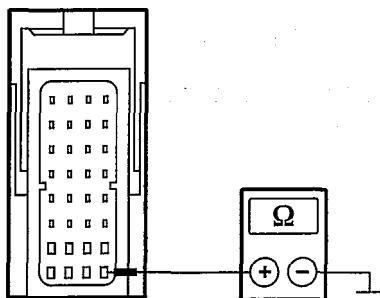
E40: CHECK THE GROUND CONNECTION OF THE PCM

- 1** Ignition switch in position 0.

DIAGNOSIS AND TESTING

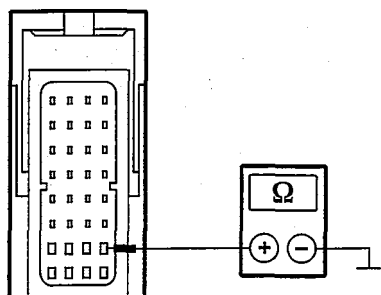
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



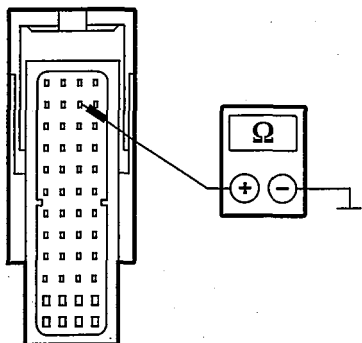
E57714

- 2 Measure the resistance between the PCM, connector C375, pin H4, circuit 91-RE8A (BK/YE), wiring harness side and ground.



E57724

- Measure the resistance between the PCM, connector C375, pin G4, circuit 91-RE8B (BK/YE), wiring harness side and ground.

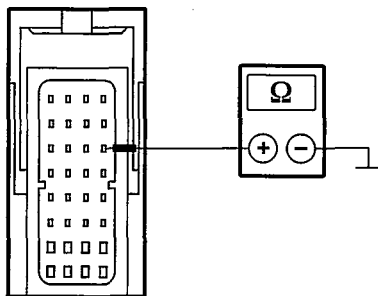


E57745

- 4 Measure the resistance between the PCM, connector C376, pin K2, circuit 91-RE8C (BK/YE), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS

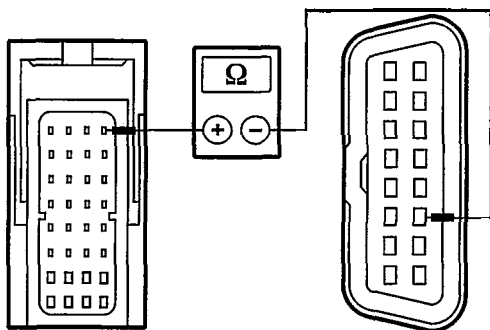


E57746

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the PCM, connector C377, pin C4, circuit 91-RE8D (BK/YE), wiring harness side and ground.
- Is a resistance of less than 2 Ohms measured in all of the cases?
- **Yes**
GO to E41.
- **No**
- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.
 - If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the affected circuit between soldered connection S109 and ground connection G1 using the wiring diagrams. CHECK the operation of the system.

E41: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT



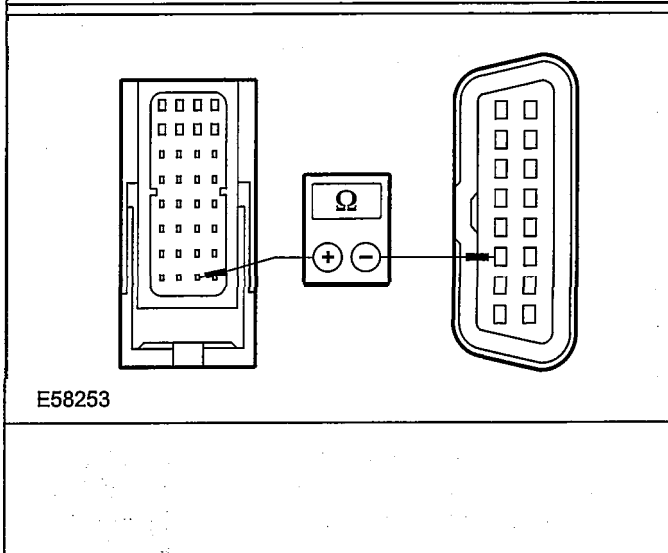
E58252

- 1** Measure the resistance between the PCM, connector C375, pin A4, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.
- Is a resistance of less than 2 Ohms registered?
- **Yes**
GO to E42.
- **No**
LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

E42: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

E58253

- 1 Measure the resistance between the PCM, connector C375, pin A3, circuit 5-EC7 (BU/RD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.

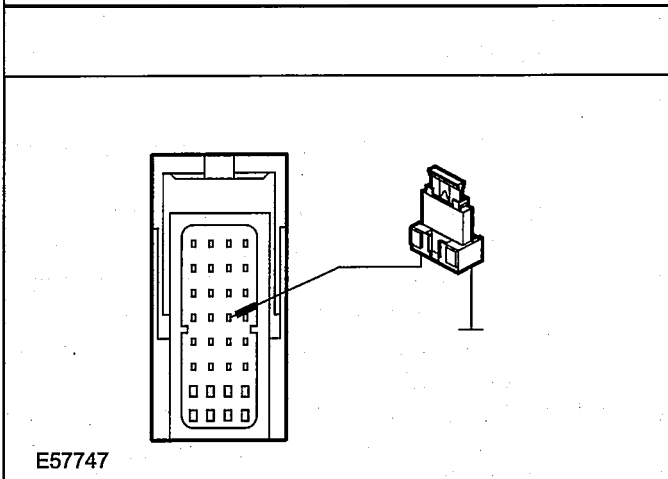
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK the PCM and RENEW if necessary.
CHECK the operation of the system.

→ **No**

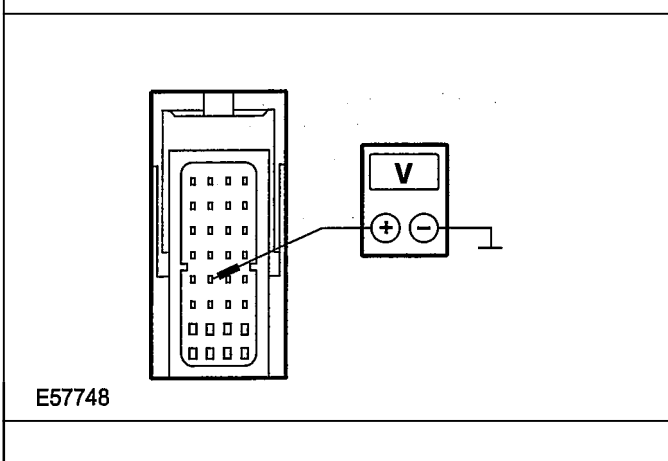
LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

E43: CHECK THE VOLTAGE AT THE PCM

E57747

- 1 Disconnect connector C372 from the PCM.

- 2 Use a fused test lead (1 A) at the PCM, connector C372, pin D2, to bridge circuit 91S-RH9 (BK/BU), wiring harness side and ground.



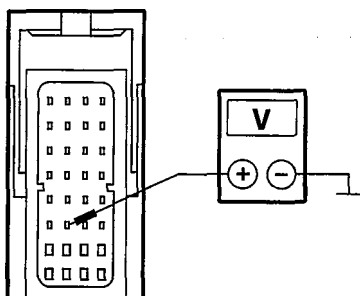
E57748

- 3 Measure the voltage between the PCM, connector C372, pin E3, circuit 15S-RE8A (GN/YE), wiring harness side and ground.

DIAGNOSIS AND TESTING

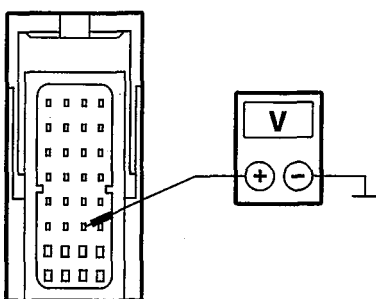
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



E57749

- ☐ Measure the voltage between the PCM, connector C372, pin F3, circuit 15S-RE8B (GN/YE), wiring harness side and ground.



E57750

- ☐ Measure the voltage between the PCM, connector C372, pin F2, circuit 15S-RE8C (GN/YE), wiring harness side and ground.

- Is battery voltage measured in all cases?

→ Yes

GO to E44.

→ No

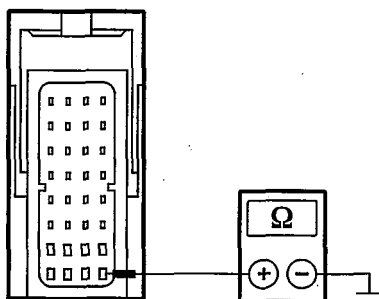
- If battery voltage is not measured during a measurement:

LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S108 using the Wiring Diagrams. CHECK the operation of the system.

- If battery voltage is not measured during all measurements:

LOCATE and REPAIR the break in circuit 15S-RN3 (GN/BU) between soldered connection S108 and fuse F13 using the Wiring Diagrams. CHECK the operation of the system.

E44: CHECK THE GROUND CONNECTION OF THE PCM



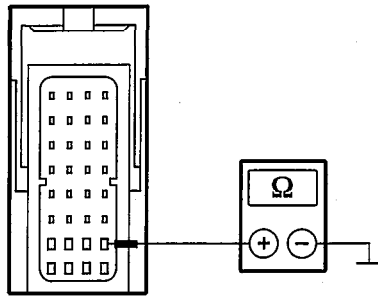
E57714

- ☐ Ignition switch in position 0.

- ☐ Measure the resistance between the PCM, connector C370, pin H4, circuit 91-RE8A (BK/YE), wiring harness side and ground.

DIAGNOSIS AND TESTING

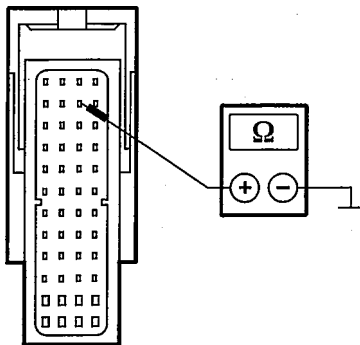
TEST CONDITIONS



E57724

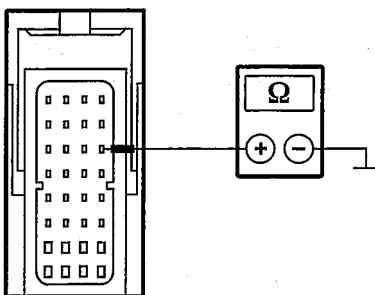
DETAILS/RESULTS/ACTIONS

Measure the resistance between the PCM, connector C370, pin G4, circuit 91-RE8B (BKNE), wiring harness side and ground.



E57745

- 4 Measure the resistance between the PCM, connector C371, pin K2, circuit 91-RE8C (BKNE), wiring harness side and ground.



E57746

- Measure the resistance between the PCM, connector C372, pin C4, circuit 91-RE8D (BK/YE), wiring harness side and ground.

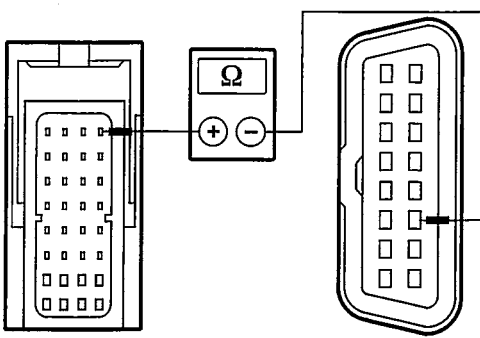
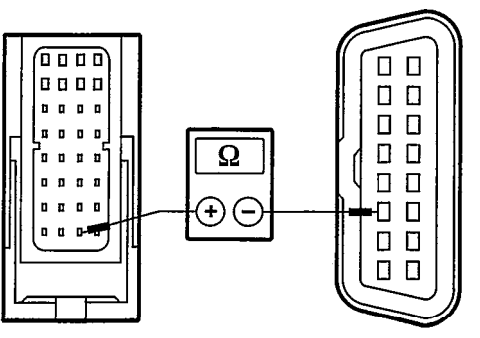
- Is a resistance of less than 2 Ohms measured in all of the cases?

→ **Yes**
GO to E45.

→ **No**

- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.
- If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the affected circuit between soldered connection S109 and ground connection G1 using the wiring diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>E45: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58252</p>	<p>1 Measure the resistance between the PCM, connector C370, pin A4, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to E46.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>E46: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58253</p>	<p><input type="checkbox"/> Measure the resistance between the PCM, connector C370, pin A3, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST F : INSTRUMENT CLUSTER NOT COMMUNICATING WITH THE DIAGNOSTIC UNIT

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>F1: DETERMINE THE CONDITIONS UNDER WHICH THE FAULT OCCURS</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Connect the diagnostic tool.</p> <p>3 Select the powertrain control module (PCM) with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the PCM? <p>→ Yes GO to F2.</p> <p>→ No GO to Pinpoint Test J.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
F2: CHECK FUSE F20	
	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> 2 CHECK fuse F20 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to F3. → No INSTALL A NEW fuse F20 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
F3: CHECK THE VOLTAGE AT FUSE F20	
	<input type="checkbox"/> Connect fuse F20 (CJB).
	<input type="checkbox"/> Measure the voltage between fuse F20 (7.5 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to F4. → No REPAIR the voltage supply to fuse F20 using the Wiring Diagrams. CHECK the operation of the system.
F4: CHECK FUSE F44	
	<input type="checkbox"/> CHECK fuse F44 (CJB).
	<ul style="list-style-type: none"> Is the fuse OK? → Yes GO to F5. → No INSTALL A NEW fuse F44 (3 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
F5: CHECK THE VOLTAGE AT FUSE F44	
	<input type="checkbox"/> 1 Connect fuse F44 (CJB).
	<input type="checkbox"/> Ignition switch in position I.

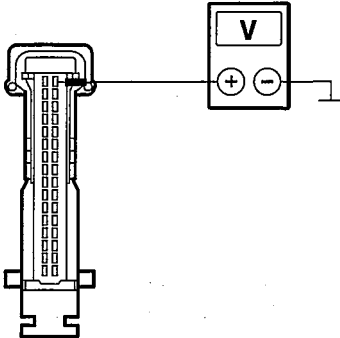
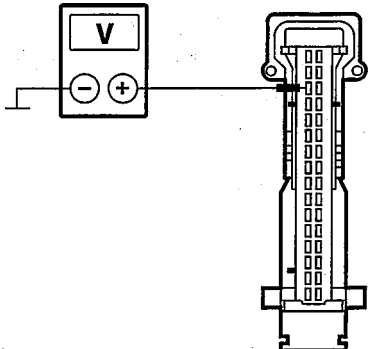
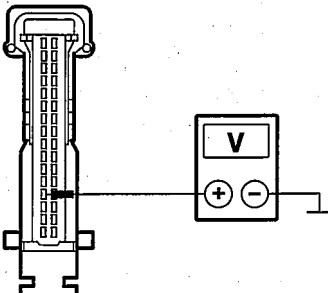
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> Measure the voltage between fuse F44 (3 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to F6. → No REPAIR the voltage supply to fuse F44 using the Wiring Diagrams. CHECK the operation of the system.
F6: CHECK FUSE F38	
	<div>1</div> Ignition switch in position 0. <input type="checkbox"/> CHECK fuse F38 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to F7. → No INSTALL A NEW fuse F38 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
F7: CHECK THE VOLTAGE AT FUSE F38	
	<div>1</div> Connect fuse F38 (CJB). <div>2</div> Ignition switch in position II. <div>3</div> Measure the voltage between fuse F38 (7.5 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to F8. → No REPAIR the voltage supply to fuse F38 using the Wiring Diagrams. CHECK the operation of the system.
F8: CHECK THE VOLTAGE AT THE INSTRUMENT CLUSTER	
	<input type="checkbox"/> Ignition switch in position 0. <div>2</div> Disconnect connector C332 from instrument cluster.

DIAGNOSIS AND TESTING

TEST CONDITIONS

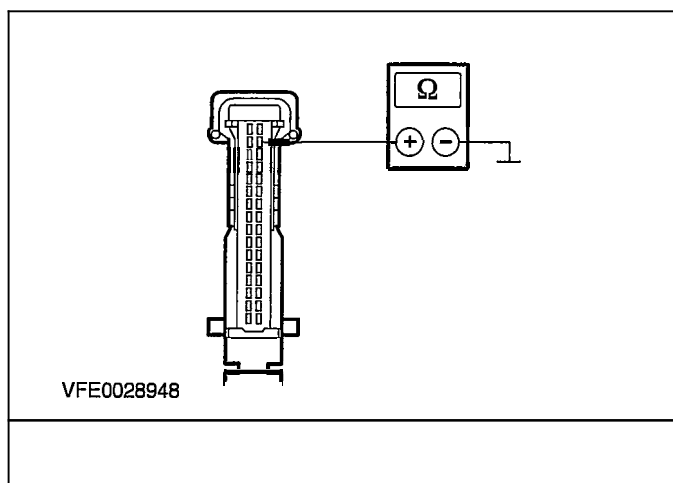
DETAILS/RESULTS/ACTIONS

 <p>VFE0028947</p>	<p>3 Measure the voltage between the instrument cluster, connector C332, pin 17, circuit 29-GG11 (OGIBU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to F9.</p> <p>→ No LOCATE and REPAIR the break in circuit 29-GG11 (OGIBU) between the instrument cluster and fuse F20 using the Wiring Diagrams. CHECK the operation of the system.</p>
F9: CHECK THE VOLTAGE AT THE INSTRUMENT CLUSTER	
 <p>E51768</p>	<p>1 Ignition switch in position I.</p> <p>2 Measure the voltage between the instrument cluster, connector C332, pin 3, circuit 75-GG11 (YE/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to F10.</p> <p>→ No LOCATE and REPAIR the break in circuit 75-GG11 (YE/RD) between the instrument cluster and fuse F44 using the Wiring Diagrams. CHECK the operation of the system.</p>
F10: CHECK THE VOLTAGE AT THE INSTRUMENT CLUSTER	
 <p>VFE0028946</p>	<p>1 Ignition switch in position II.</p> <p>2 Measure the voltage between the instrument cluster, connector C332, pin 13, circuit 15-GG11 (GN/BU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to F11.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the instrument cluster and fuse F38 using the Wiring Diagrams. CHECK the operation of the system.</p>
F11: CHECK THE GROUND CONNECTION OF THE INSTRUMENT CLUSTER	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



- ☐ Measure the resistance between the instrument cluster, connector C332, pin 18, circuit 31-GG11 (BK), wiring harness side and ground.

- Is a resistance of less than 2 Ohm registered?

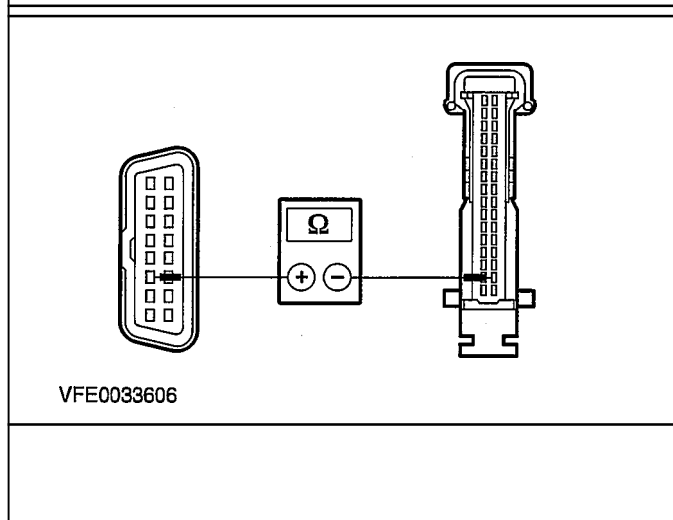
→ **Yes**

GO to F12.

→ **No**

LOCATE and REPAIR the open circuit between the instrument cluster and ground connection G25 (vehicles built from 0112004: G14) using the Wiring Diagrams. CHECK the operation of the system.

F12: CHECK THE CIRCUIT BETWEEN THE INSTRUMENT CLUSTER AND THE DLC FOR CONTINUITY



- ☐ Measure the resistance between the instrument cluster, connector C332, pin 31, circuit 5-EC8A (BU/WH), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

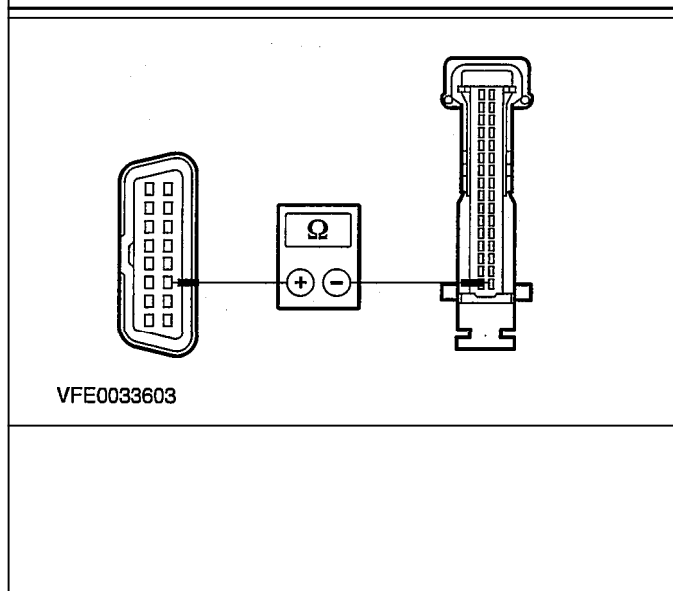
→ **Yes**

GO to F13.

→ **No**

LOCATE and RECTIFY the break in the circuit between the instrument cluster and soldered connection S272 using the Wiring Diagrams. CHECK the operation of the system.

F13: CHECK THE CIRCUIT BETWEEN THE INSTRUMENT CLUSTER AND THE DLC FOR CONTINUITY



Measure the resistance between the instrument cluster, connector C332, pin 32, circuit 4-EC8A (GY/VT), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK and if necessary RENEW the instrument cluster. CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the break in the circuit between the instrument cluster and soldered connection S273 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING**PINPOINT TEST G : TRANSMISSION CONTROL MODULE (TCM) NOT COMMUNICATING WITH DIAGNOSTIC TESTER - VEHICLES WITH AUTOMATIC CLUTCH AND GEARSHIFT ACTUATION****TEST CONDITIONS****DETAILS/RESULTS/ACTIONS****G1: DETERMINE THE CONDITIONS UNDER WHICH THE FAULT OCCURS**

	1 Ignition switch in position 0.
	2 Connect the diagnostic tool.
	<input type="checkbox"/> Select the powertrain control module (PCM) with the diagnostic tester. <ul style="list-style-type: none"> Is it possible to establish communication with the PCM? → Yes GO to G2. → No GO to Pinpoint Test J.

G2: CHECK FUSE FB

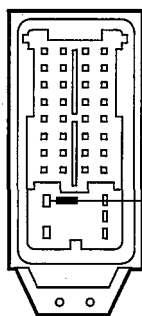
	1 Ignition switch in position 0.
	2 CHECK fuse FB (BJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to G3. → No RENEW fuse FB (60 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

G3: CHECK THE VOLTAGE AT FUSE FB

	1 Connect fuse FB (BJB).
	2 Measure the voltage between fuse FB (60 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to G4. → No REPAIR the voltage supply to fuse FB using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

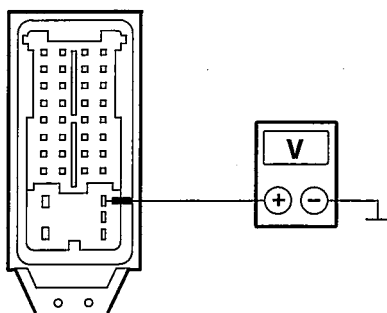
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G4: CHECK FUSE F41	<p>1 CHECK fuse F41 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to G5.</p> <p>→ No INSTALL A NEW fuse F41 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
G5: CHECK THE VOLTAGE AT FUSE F41	<p>1 Connect fuse F41 (CJB).</p> <p><input type="checkbox"/> Ignition switch in position II.</p> <p><input type="checkbox"/> Measure the voltage between fuse F41 (7.5 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to G6.</p> <p>→ No REPAIR the voltage supply to fuse F41 using the Wiring Diagrams. CHECK the operation of the system.</p>
G6: CHECK VOLTAGE AT TCM	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect connector C676 from TCM.</p> <p><input type="checkbox"/> Measure the voltage between the TCM, connector C676, pin 49, circuit 30-TA55A (RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to G7.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the TCM and fuse FB using the Wiring Diagrams. CHECK the operation of the system.</p>
G7: CHECK VOLTAGE AT TCM	<p>1 Ignition switch in position II.</p>



VFE0033754

DIAGNOSIS AND TESTING

TEST CONDITIONS

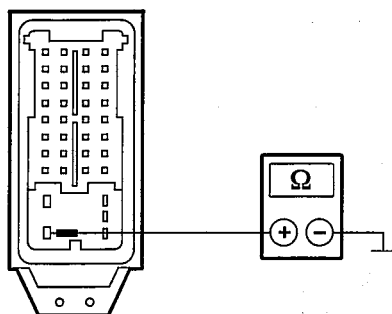


VFE0033755

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between the TCM, connector C676, pin 47, circuit 15-TA55 (GNIBK), wiring harness side and ground.
- Does the meter display battery voltage?
- **Yes**
GO to G8.
- **No**
LOCATE and REPAIR the break in circuit 15-TA55 (GNIBK) between TCM and fuse F41 using the Wiring Diagrams. CHECK the operation of the system.

G8: CHECK GROUND CONNECTION OF TCM



VFE0033756

- 1 Ignition switch in position 0.
- 2 Measure the resistance between the TCM, connector C676, pin 48, circuit 91-TA55 (BWGN), wiring harness side and ground.
- Is a resistance of less than 2 Ohm registered?
- **Yes**
CHECK the TCM and RENEW if necessary. CHECK the operation of the system.
- **No**
LOCATE and REPAIR the break in circuit 91-TA55 (BWGN) between TCM and battery negative using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST H : TRANSMISSION CONTROL MODULE (TCM) NOT COMMUNICATING WITH DIAGNOSTIC UNIT - VEHICLES WITH AUTOMATIC TRANSMISSION

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

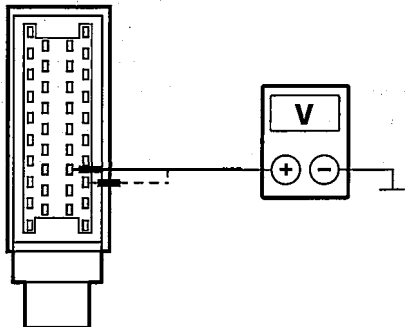
H1: DETERMINE THE CONDITIONS UNDER WHICH THE FAULT OCCURS

- 1 Ignition switch in position 0.
- 2 Connect the diagnostic tool.
- 3 Select the powertrain control module (PCM) with the diagnostic tester.
- Is it possible to establish communication with the PCM?
- **Yes**
GO to H2.
- **No**
GO to Pinpoint Test J.

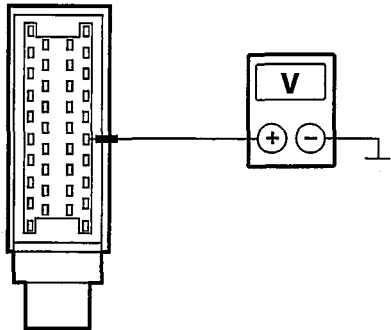
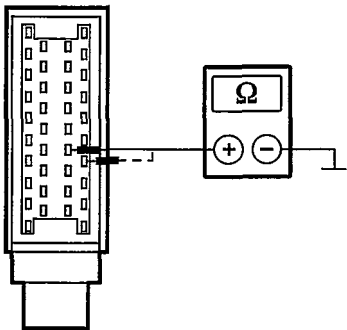
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H2: CHECK FUSE F7	
	1 Ignition switch in position 0.
	2 CHECK fuse F7 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to H3. → No INSTALL A NEW fuse F7 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
H3: CHECK THE VOLTAGE AT FUSE F7	
	1 Connect fuse F7 (CJB).
	2 Measure the voltage between fuse F7 (15 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to H4. → No REPAIR the voltage supply to fuse F7 using the Wiring Diagrams. CHECK the operation of the system.
H4: CHECK FUSE F41	
	<input type="checkbox"/> CHECK fuse F41 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to H5. → No INSTALL A NEW fuse F41 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
H5: CHECK THE VOLTAGE AT FUSE F41	
	1 Connect fuse F41 (CJB).
	2 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Measure the voltage between fuse F41 (7.5 A) and ground.</p> <p>Does the meter display battery voltage?</p> <p>→ Yes GO to H6.</p> <p>→ No REPAIR the voltage supply to fuse F41 using the Wiring Diagrams. CHECK the operation of the system.</p>
H6: CHECK VOLTAGE AT TCM	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C428 from automatic transmission module.</p>
 <p>E47283</p>	<p>3 Measure the voltage between the TCM, connector C428, pin 22, circuit 29-TA55A (OGIBK), wiring harness side and ground.</p>
	<p>4 Measure the voltage between the TCM, connector C428, pin 31, circuit 29-TA55B (OG/BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured in both cases? <p>→ Yes GO to H7.</p> <p>→ No</p> <ul style="list-style-type: none"> - If battery voltage is not measured during a measurement: LOCATE and REPAIR the break in the relevant circuit between the TCM and soldered connection S128 using the Wiring Diagrams. CHECK the operation of the system. - If battery voltage is not measured during both measurements: LOCATE and REPAIR the break in the circuit between soldered connection S128 and fuse F7 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

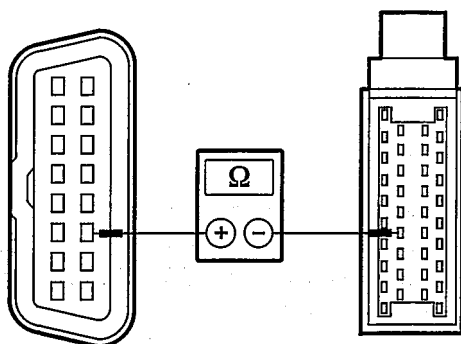
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H7: CHECK VOLTAGE AT TCM  E47284	<div><input type="checkbox"/> Ignition switch in position II.</div> <div><input type="checkbox"/> Measure the voltage between the TCM, connector C428, pin 33, circuit 15-TA55A (GN/BK), wiring harness side and ground.<ul style="list-style-type: none">• Does the meter display battery voltage?<ul style="list-style-type: none">→ Yes GO to H8.→ No LOCATE and REPAIR the break in the circuit between the TCM and fuse F41 using the Wiring Diagrams. CHECK the operation of the system.</div>
H8: CHECK GROUND CONNECTION OF TCM  E47285	<div><input type="checkbox"/> 1 Ignition switch in position 0.</div> <div><input type="checkbox"/> 2 Measure the resistance between the TCM, connector C428, pin 23, circuit 91-TA55A (BWGN), wiring harness side and ground.</div>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- 3 Measure the resistance between the TCM, connector C428, pin 32, circuit 91-TA55B (BK/GN), wiring harness side and ground.
- Is a resistance of less than 2 Ohms measured in both cases?
- **Yes**
GO to H9.
- **No**
- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the TCM and soldered connection S132 using the Wiring Diagrams. CHECK the operation of the system.
 - If a resistance of more than 2 Ohms is measured in both of the measurements: LOCATE and REPAIR the break in the relevant circuit between soldered connection S132 and battery negative using the Wiring Diagrams. CHECK the operation of the system.

H9: CHECK THE CIRCUIT BETWEEN THE TCM AND THE DLC FOR CONTINUITY.

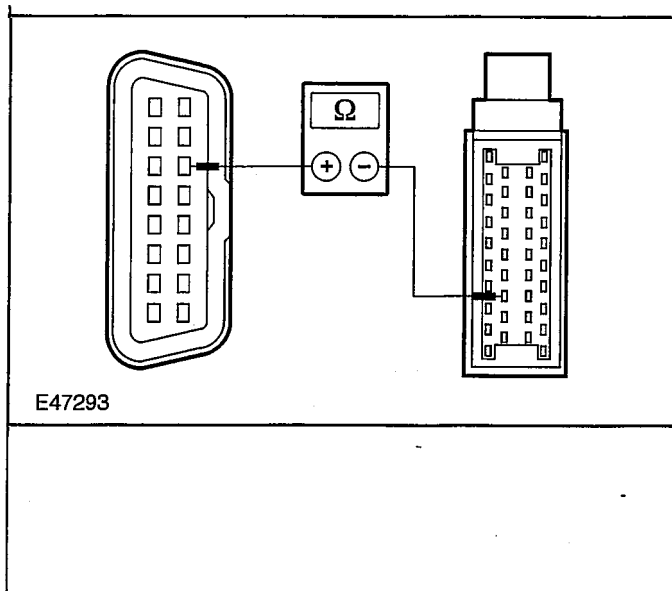
E47292

Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and the TCM, connector C428, pin 25, circuit 4-EC16 (GY/WH), wiring harness side.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



☐ Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and the TCM, connector C428, pin 26, circuit 5-EC16 (BUIOG), wiring harness side.

- Is a resistance of less than 2 Ohms measured in both cases?

→ **Yes**

CHECK the TCM and RENEW if necessary. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in the relevant circuit between the TCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST I : FAULTY COMMUNICATION BETWEEN THE MODULES (ISO 9141 BUS)

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

I1: CHECK FUSE F18

1 Ignition switch in position 0.

2 CHECK fuse F18 (CJB).

- Is the fuse OK?

→ **Yes**

GO to 12

→ **No**

INSTALL A NEW fuse F18 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

I2: CHECK THE VOLTAGE AT FUSE F18

1 Connect fuse F18 (CJB).

2 Measure the voltage between fuse F18 (15 A) and ground.

- Does the meter display battery voltage?

→ **Yes**

GO to 13.

→ **No**

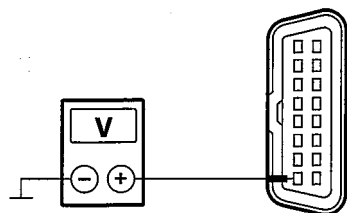
REPAIR the voltage supply to fuse F18 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS

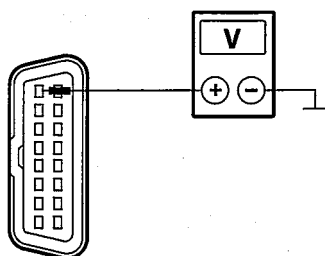
I3: CHECK THE VOLTAGE AT THE DATA LINK CONNECTOR (DLC)



VFE0028957

- 1 Measure the voltage between the DLC, connector C308, pin 16, circuit 29-RAI (OG), wiring harness side and ground.
 - Does the meter display battery voltage?
 - **Yes**
GO to 14.
 - **No**
LOCATE and REPAIR the open circuit between the DLC and fuse F18 using the Wiring Diagrams. CHECK the operation of the system.

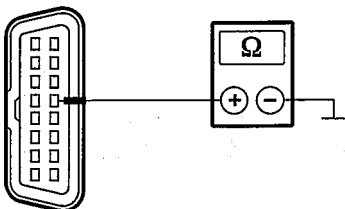
I4: CHECK THE VOLTAGE AT THE DLC



VFE0028963

- 1 Ignition switch in position II.
- Measure the voltage between the DLC, connector C308, pin 9, circuit 15-RA1 (GNIRD), wiring harness side and ground.
 - Does the meter display battery voltage?
 - **Yes**
GO to 15.
 - **No**
LOCATE and REPAIR the break in circuit 15-RA1 (GNIRD) between the DLC and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.

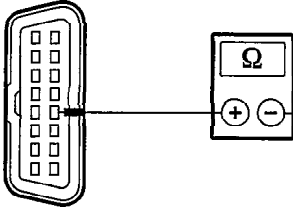
I5: CHECK THE GROUND CONNECTION OF THE DLC



VFE0028965

- 1 Ignition switch in position 0.
- 2 Measure the resistance between the DLC, connector C308, pin 4, circuit 31-RA1 (BK), wiring harness side and ground.
 - Is a resistance of less than 2 Ohm registered?
 - **Yes**
GO to 16.
 - **No**
LOCATE and REPAIR the open circuit between the DLC and ground connection G25 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
16: CHECK THE GROUND CONNECTION OF THE DLC	
 <p>VFE0028964</p>	<p>1 Measure the resistance between the DLC, connector C308, pin 5, circuit 91-RA1 (BK/OG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? <p>→ Yes GO to 17.</p> <p>→ No LOCATE and REPAIR the break in circuit 91-RA1 (BWOOG) between the DLC and ground connection G31 using the Wiring Diagrams. CHECK the operation of the system.</p>
17: PERFORM NETWORK TEST	
	<p>1 Disconnect Connector C303 from ABS module - vehicles built up to 0312004 / or ESP module.</p> <p><input type="checkbox"/> Disconnect Vehicles with ABS - vehicles built from 0412004 onwards: connector C304 from ABS module.</p> <p>3 Connect the diagnostic tool.</p> <p>4 Select the vehicle with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish a connection between the vehicle and the generic electronic module (GEM)? <p>→ Yes CHECK and if necessary RENEW the ABS module or electronic stability program module (ESP). CHECK the operation of the system.</p> <p>→ No GO to 18.</p>
18: PERFORM NETWORK TEST (SAFETY RESTRAINT CONTROL MODULE (RCM))	
<p>WARNINGS:</p> <p>▲ After disconnecting the battery, wait for at least one minute before working on the supplementary restraint system to prevent the risk of accidental airbag deployment. Failure to observe this instruction can lead to injury.</p> <p>▲ Do not program any keycodes while working on the safety restraint system in order to prevent the risk of accidental deployment of safety restraint system components. Failure to observe this instruction can lead to injury.</p> <p>▲ Always use adapters for terminal probe kit when testing any connectors of the airbag systems or of any other safety restraint systems. Failure to observe this instruction can lead to injury.</p>	
	<p>1 Disconnect ground cable from battery.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

2 Disconnect connector C500 from safety restraint control module (RCM).

3 Connect ground cable from battery.

4 Select the vehicle with the diagnostic tester.

- Is it possible to establish a connection between the vehicle and the generic electronic module (GEM)?

→ **Yes**

CHECK and if necessary RENEW the safety restraint control module (RCM). CHECK the operation of the system.

→ **No**

GO to 19.

I9: TEST THE ISO 9141 BUS FOR A SHORT TO VOLTAGE SUPPLY

1 Ignition switch in position 0.

2 Disconnect connector C320 (brown) from GEM.

3 Ignition switch in position II.

4 Measure the voltage between the DLC, connector C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side and ground.

- Is a voltage measured?

→ **Yes**

LOCATE and REPAIR the short to voltage in the circuits connected to soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to I10.

I10: CHECK THE ISO 9141 BUS FOR A SHORT TO GROUND

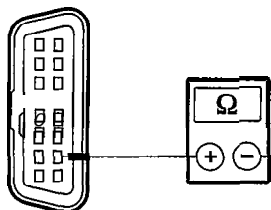
1 Ignition switch in position 0.

E0029118

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



E0029119

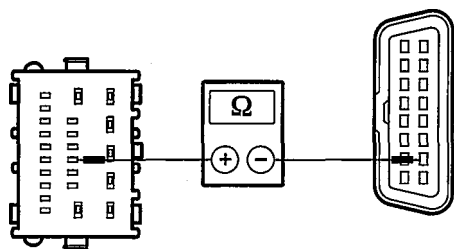
- ☐ Measure the resistance between the DLC, connector C308, pin 7, circuit 4-EE10 (GYIBK), wiring harness side and ground.

- Is a resistance of more than 10,000 Ohm measured?

→ **Yes**
GO to 111.

→ **No**
LOCATE and REPAIR the short to ground in the circuits connected to soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

III : CHECK FOR OPEN CIRCUIT BETWEEN THE GEM AND THE DLC.



VFE0033612

Measure the resistance between GEM, connector C320 (brown), pin 10, circuit 4-EE11 (GY/WH), wiring harness side and DLC, C308, pin 7, circuit 4-EE10 (GYIBK), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**
TEST the GEM and RENEW as necessary. CHECK the operation of the system.

→ **No**
LOCATE and REPAIR the break in circuit 4-EE10 (GYIBK) between the DLC and soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST J : FAULTY COMMUNICATION BETWEEN THE MODULES - CAN BUS

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

NOTE:The number of modules connected to the CAN bus depends on the equipment levels of the vehicle. Therefore not every vehicle will have all the modules mentioned below.

J1: CHECK FUSE F18

1 Ignition switch in position 0.

2 CHECK fuse F18 (CJB).

- Is the fuse OK?

→ **Yes**
GO to J2.

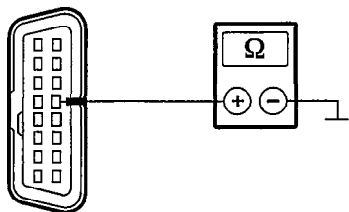
→ **No**
INSTALL A NEW fuse F18 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J2: CHECK THE VOLTAGE AT FUSE F18	<ol style="list-style-type: none"> 1 Connect fuse F18 (CJB). 2 Measure the voltage between fuse F18 (15 A) and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to J3. → No REPAIR the voltage supply to fuse F18 using the Wiring Diagrams. CHECK the operation of the system.
J3: CHECK THE VOLTAGE AT THE DATA LINK CONNECTOR (DLC) <div> </div> <div>VFE0028957</div>	<ol style="list-style-type: none"> 1 Measure the voltage between the DLC, connector C308, pin 16, circuit 29-RA1 (OG), wiring harness side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to J4. → No LOCATE and REPAIR the open circuit between the DLC and fuse F18 using the Wiring Diagrams. CHECK the operation of the system.
J4: CHECK THE VOLTAGE AT THE DLC <div> </div> <div>VFE0028963</div>	<ol style="list-style-type: none"> 1 Ignition switch in position II. 2 Measure the voltage between the DLC, connector C308, pin 9, circuit 15-RA1 (GNIRD), wiring harness side and ground. <ul style="list-style-type: none"> Does the meter display battery voltage? → Yes GO to J5. → No LOCATE and REPAIR the break in circuit 15-RA1 (GNIRD) between the DLC and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.
J5: CHECK THE GROUND CONNECTION OF THE DLC	<input type="checkbox"/> Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS

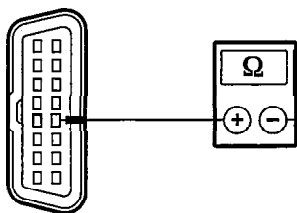


VFE0028965

DETAILS/RESULTS/ACTIONS

- 2** Measure the resistance between the DLC, connector C308, pin 4, circuit 31-RA1 (BK), wiring harness side and ground.
- Is a resistance of less than 2 Ohm registered?
- **Yes**
GO to J6.
- **No**
LOCATE and REPAIR the open circuit between the DLC and ground connection G25 using the Wiring Diagrams. CHECK the operation of the system.

J6: CHECK THE GROUND CONNECTION OF THE DLC



VFE0028964

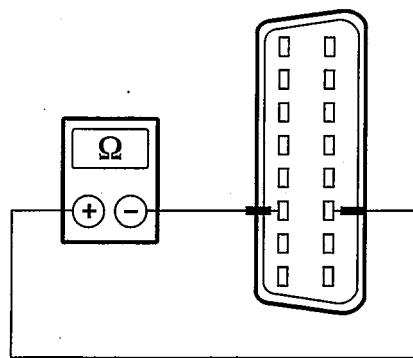
- 1** Measure the resistance between the DLC, connector C308, pin 5, circuit 91-RA1 (BWO), wiring harness side and ground.
- Is a resistance of less than 2 Ohm registered?
- **Yes**
GO to J7.
- **No**
LOCATE and REPAIR the break in circuit 91-RA1 (BWO) between the DLC and ground connection G31 using the Wiring Diagrams. CHECK the operation of the system.

J7: CHECK THE CAN BUS FOR SHORT CIRCUIT

- ☐ Disconnect the ground cable from the battery.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E45951

DETAILS RESULTS ACTIONS

- 2** Measure the resistance at the DLC, connector C308, between pin 6, circuit 4-EC1 (GY/RD), wiring harness side and pin 14, circuit 5-EC1 (BU/RD), wiring harness side.

- Is a resistance of between 55 and 65 Ohms measured?

→ **Yes**

- Vehicles without automatic clutch and gearshift actuation:
GO to J14.
- Vehicles with automatic clutch and gearshift actuation:
GO to J8.

→ **No**

- A resistance of between 115 and 125 Ohms is measured:
GO to J17.
- A resistance of between 115 and 125 Ohms is not measured:
GO to J35.

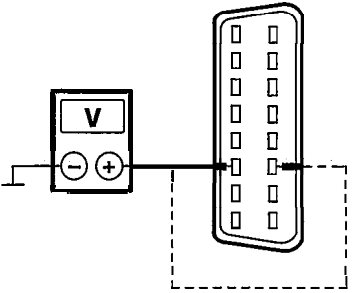
J8: PERFORM NETWORK TEST

- 1** Connect the ground cable to the battery.

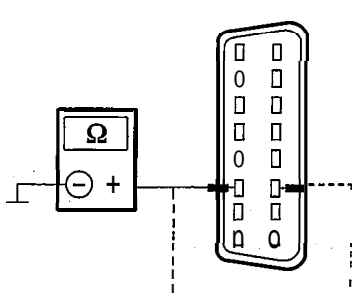
- 2** Connect the diagnostic tool.

- ☐ Disconnect a listed component, then perform the following test step:
- Vehicles with ABS built up to 0312004 or vehicles with electronic stability program (ESP): Connector 303 from ABS module or ESP module
 - Vehicles with ABS built from 0412004 onwards: connector C304 from ABS module
 - connector C679 from von transmission selector unit
 - connector C332 from instrument cluster
 - Connector C281 from the power steering pump module

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>4 Select the vehicle with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the PCM? <p>→ Yes The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> If not all the listed components are disconnected: Key in the OFF position. DISCONNECT the next component (go to test step 3). If all the listed components are disconnected: GO to J9.
J9: CHECK THE CAN BUS FOR A SHORT TO VOLTAGE SUPPLY	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C676 from transmission control module (TCM).</p> <p>3 Disconnect Vehicles with 1.6L diesel engine: connector C384 from PCM.</p> <p><input type="checkbox"/> Disconnect Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): connector C370 from PCM.</p> <p>5 Disconnect Vehicles with 1.4L petrol engine: connector C343 from PCM.</p> <p>6 Ignition switch in position II.</p>
 <p>VFE0038142</p>	<p>7 Measure the voltage between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.</p>

DIAGNOSIS AND TESTING

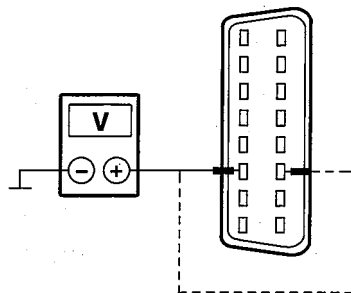
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>8 Measure the voltage between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/IRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a voltage measured? <p>→ Yes LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No GO to J10.</p>
J10: CHECK THE CAN BUS FOR A SHORT TO GROUND	
 <p>VFE0038143</p>	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.</p>
	<p><input type="checkbox"/> Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 Ohms measured in both cases? <p>→ Yes GO to J11.</p> <p>→ No LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Disconnect a listed component, then perform the following test step:</p> <ul style="list-style-type: none"> - Vehicles with ABS built up to 0312004 or vehicles with electronic stability program (ESP): Connector 303 from ABS module or ESP module - Vehicles with ABS built from 0412004 onwards: connector C304 from ABS module - Vehicles with automatic transmission: connector C428 from automatic transmission module - connector C332 from instrument cluster <p>4 Select the vehicle with the diagnostic tester.</p> <ul style="list-style-type: none"> • Is it possible to establish communication with the PCM? <p>→ Yes The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> - If not all the listed components are disconnected: Key in the OFF position. DISCONNECT the next component (go to test step 3). - If all the listed components are disconnected: GO to J15.
J15: CHECK THE CAN BUS FOR A SHORT TO VOLTAGE SUPPLY	
	Ignition switch in position 0.
	2 Disconnect Vehicles with 1.6L diesel engine: connector C384 from PCM.
	Disconnect Vehicles with 2.0L petrol engine: connector C380 from PCM.
	4 Disconnect Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR): connector C375 from PCM.
	5 Disconnect Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): connector C370 from PCM.
	6 Disconnect Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine: connector C343 from PCM.
	7 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0038142

DETAILS/RESULTS/ACTIONS

- 8 Measure the voltage between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.

- 9 Measure the voltage between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and ground.

- Is a voltage measured?

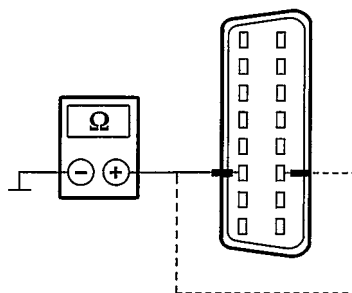
→ **Yes**

LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to J16.

J16: CHECK THE CAN BUS FOR A SHORT TO GROUND



VFE0038143

- 1 Ignition switch in position 0.

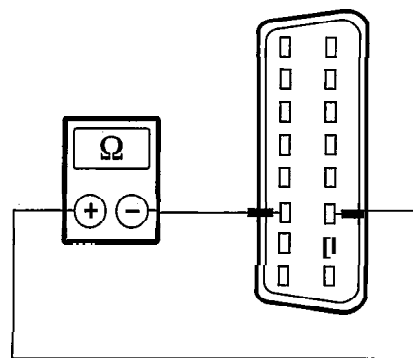
- Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and ground.</p> <ul style="list-style-type: none">• Is a resistance greater than 10,000 Ohms measured in both cases? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p>
J17: CHECK INSTRUMENT CLUSTER	
	<p>1 Disconnect connector C332 from instrument cluster.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



E45951

DETAILS/RESULTS/ACTIONS

Measure the resistance at the DLC, connector C308, between pin 6, circuit 4-EC1 (GY/RD), wiring harness side and pin 14, circuit 5-EC1 (BUIRD), wiring harness side.

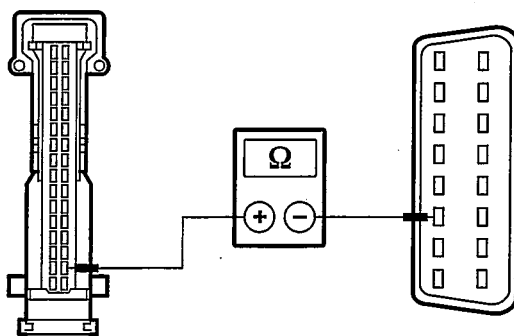
- Is a resistance of between 115 and 125 Ohms measured?

→ **Yes**
GO to J18.

→ **No**

- Vehicles with automatic clutch and gearshift actuation:
GO to J20.
- Vehicles with 1.6L diesel engine without automatic clutch and gearshift actuation:
GO to J29.
- Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR) and without automatic clutch and gearshift actuation:
GO to J27.
- Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR) and without automatic clutch and gearshift actuation:
GO to J33.
- Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine without automatic clutch and gearshift actuation:
GO to J31.
- Vehicles with 2.0L diesel engine without automatic clutch and gearshift actuation:
GO to J25.

J18: CHECK THE CIRCUIT BETWEEN THE INSTRUMENT CLUSTER AND THE DLC FOR CONTINUITY



VFE58689

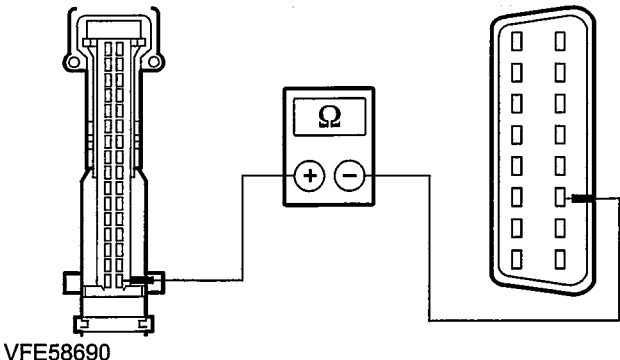
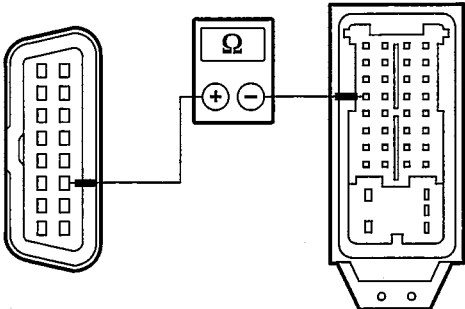
- ☐ Measure the resistance between the instrument cluster, connector C332, pin 31, circuit 5-EC8A (BU/WH), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**
GO to J19.

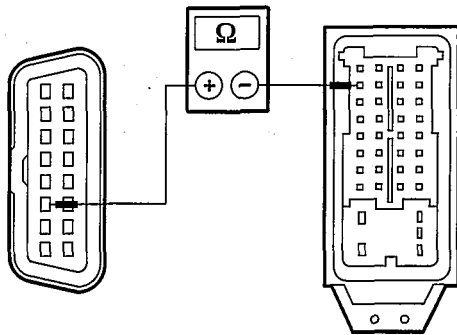
→ **No**
LOCATE and REPAIR the break in the circuit between the instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS RESULTS ACTIONS
<p>J19: CHECK THE CIRCUIT BETWEEN THE INSTRUMENT CLUSTER AND THE DLC FOR CONTINUITY</p>  <p>VFE58690</p>	<p>1 Measure the resistance between the instrument cluster, connector C332, pin 32, circuit 4-EC8A (GY/VT), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? <p>→ Yes CHECK and if necessary RENEW the instrument cluster. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>J20: CHECK THE CIRCUIT BETWEEN THE TCM AND THE DLC FOR CONTINUITY.</p>  <p>VFE0033757</p>	<p>1 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side and the TCM, connector C676, pin 54, circuit 4-EC8 (GYM), wiring harness side.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0033758

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and the TCM, connector C676, pin 56, circuit 5-EC8 (BU/WH), wiring harness side.

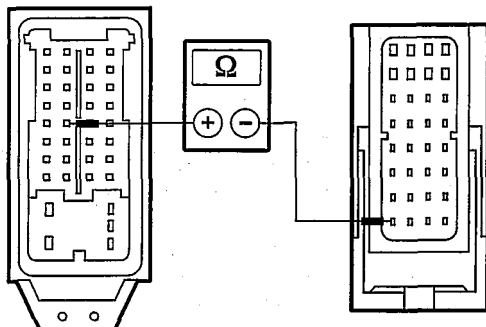
Is a resistance of less than 2 Ohms measured in all of the cases?

→ **Yes**

- Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): GO to J22.
- Vehicles with 1.4L petrol engine: GO to J23.
- Vehicles with 1.6L diesel engine: GO to J21.

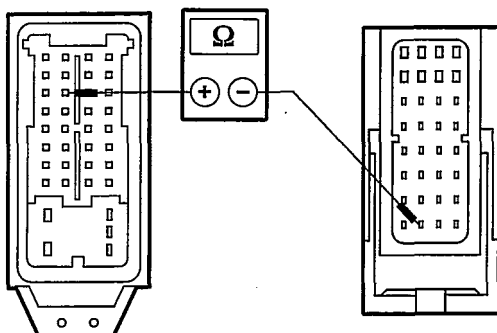
→ **No**

LOCATE and REPAIR the break in the relevant circuit using the Wiring Diagrams. CHECK the operation of the system.

J21: CHECK THE CIRCUIT BETWEEN THE TCM AND THE PCM FOR CONTINUITY.

E58254

- 1** Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GYIRD), wiring harness side and the PCM, connector C384, pin A4, circuit 4-EC7 (GYIRD), wiring harness side.



E58255

- 2** Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BUIRD), wiring harness side and the PCM, connector C384, pin A3, circuit 5-EC7 (BUIRD), wiring harness side.

- Is a resistance of less than 2 Ohms measured in all of the cases?

→ **Yes**

GO to J24.

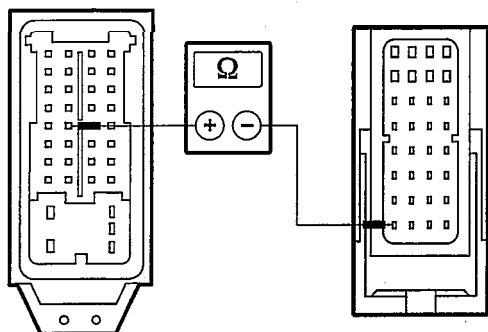
→ **No**

LOCATE and REPAIR the break in the relevant circuit using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

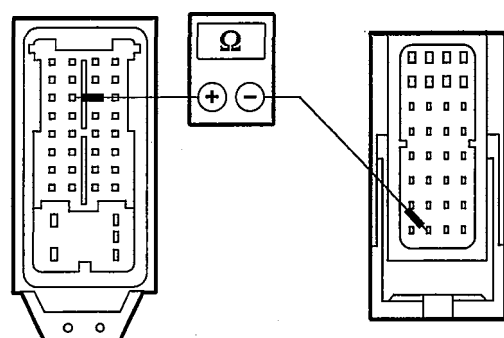
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

J22: CHECK THE CIRCUIT BETWEEN THE TCM AND THE PCM FOR CONTINUITY.

E58254

- 1 Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GYIRD), wiring harness side and the PCM, connector C370, pin A4, circuit 4-EC7 (GYIRD), wiring harness side.



E58255

- 2 Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BUIRD), wiring harness side and the PCM, connector C370, pin A3, circuit 5-EC7 (BUIRD), wiring harness side.

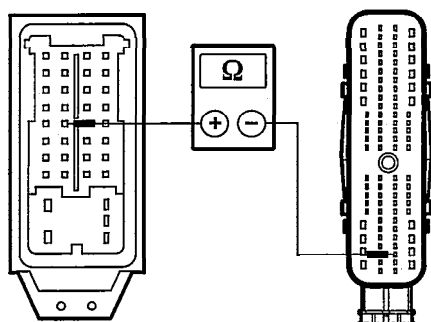
- Is a resistance of less than 2 Ohms measured in all of the cases?

→ **Yes**

GO to J24.

→ **No**

LOCATE and REPAIR the break in the relevant circuit using the Wiring Diagrams. CHECK the operation of the system.

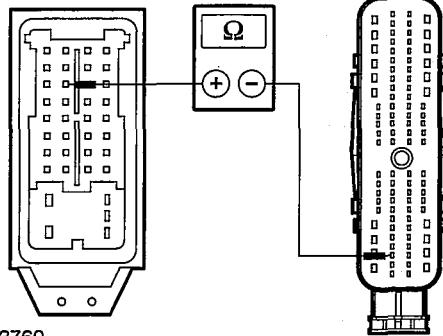
J23: CHECK THE CIRCUIT BETWEEN THE TCM AND THE PCM FOR CONTINUITY.

VFE0033759

- 1 Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GY/RD), wiring harness side and the PCM, connector C343, pin F31, circuit 4-EC7 (GYIRD), wiring harness side.

DIAGNOSIS AND TESTING

TEST CONDITIONS

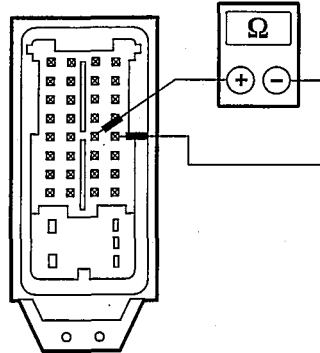


VFE0033760

DETAILS RESULTS ACTIONS

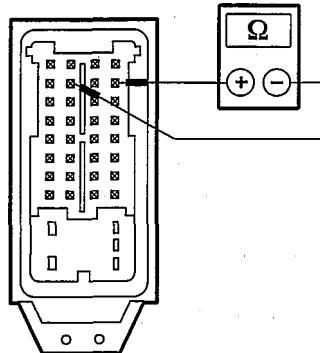
- 2 Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BUIRD), wiring harness side and the PCM, connector C343, pin F19, circuit 5-EC7 (BUIRD), wiring harness side.
- Is a resistance of less than 2 Ohms measured in all of the cases?
- **Yes**
GO to J24.
- **No**
LOCATE and REPAIR the break in the relevant circuit using the Wiring Diagrams. CHECK the operation of the system.

J24: CHECK THE TCM FOR BREAKS



VFE0033765

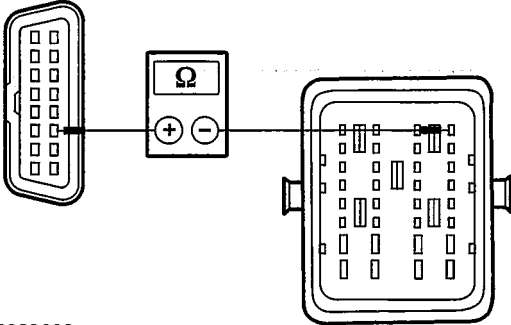
- 1 Measure the resistance at TCM, connector C676, between pin 54 and pin 61, component side.



VFE0033766

- Measure the resistance at TCM, connector C676, between pin 56 and pin 63, component side.
- Is a resistance of less than 2 Ohms measured in both cases?
- **Yes**
CHECK the PCM and RENEW if necessary. CHECK the operation of the system.
- **No**
CHECK the TCM and RENEW as necessary. CHECK the operation of the system.

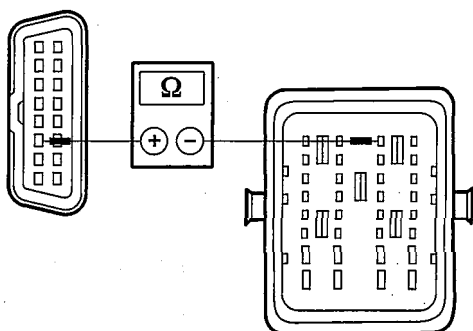
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J25: CHECK CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
	<p><input checked="" type="checkbox"/> 1 Measure the resistance between the PCM, connector C380, pin 41, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to J26.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
J26: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
	<p><input type="checkbox"/> Measure the resistance between the PCM, connector C380, pin 30, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
J27: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
 <p>VFE0033609</p>	<p><input type="checkbox"/> Disconnect connector C370 from the PCM.</p> <p><input type="checkbox"/> Measure the resistance between the PCM, connector C370, pin A4, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to J28.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

J28: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

VFE0033610

- 1 Measure the resistance between the PCM, connector C370, pin A3, circuit 5-EC7 (BU/RD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.

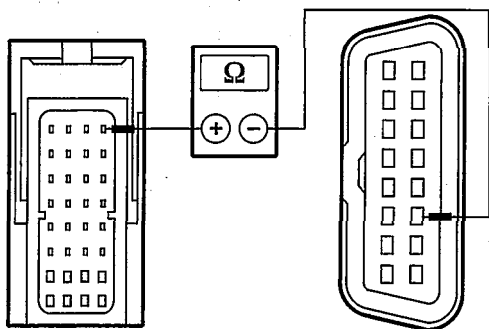
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK the PCM and RENEW if necessary.
CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

J29: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

E58252

- 1 Disconnect connector C384 from PCM.

- 2 Measure the resistance between the PCM, connector C384, pin A4, circuit 4-EC7 (GY/RD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

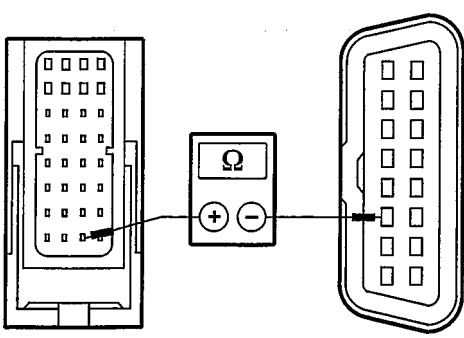
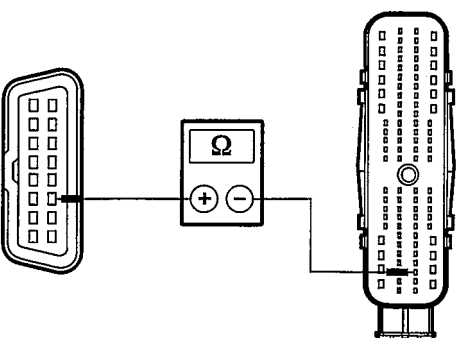
→ **Yes**

GO to J30.

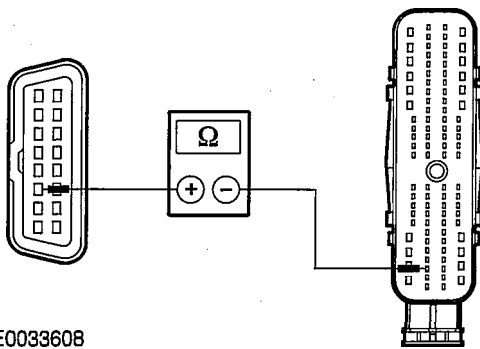
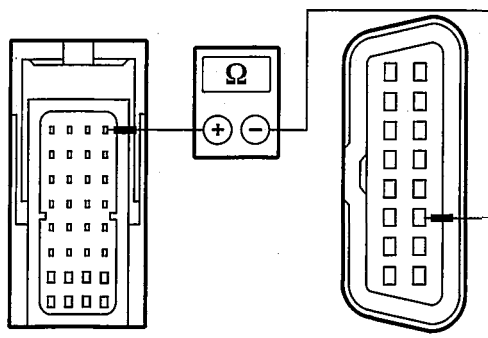
→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

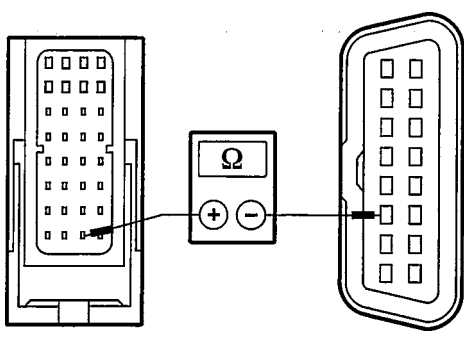
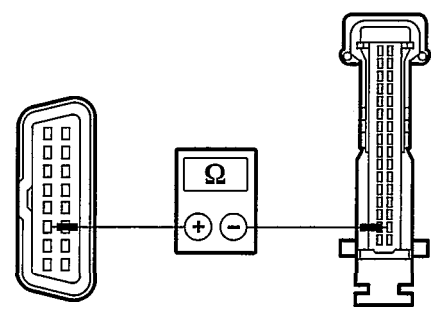
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>J30: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58253</p>	<p>1 Measure the resistance between the PCM, connector C384, pin A3, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>J31: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>VFE0033605</p>	<p>1 Disconnect connector C343 from PCM.</p> <p>2 Measure the resistance between the PCM, connector C343, pin F31, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to J32.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>J32: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>VFE0033608</p>	<p>1 Measure the resistance between the PCM, connector C343, pin F19, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>J33: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58252</p>	<p>1 Disconnect connector C375 from PCM.</p> <p><input type="checkbox"/> Measure the resistance between the PCM, connector C375, pin A4, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to J34.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

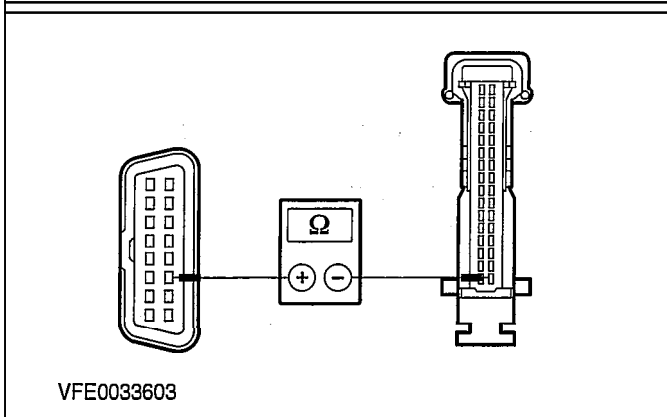
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>J34: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58253</p>	<p>Measure the resistance between the PCM, connector C375, pin A3, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>J35: CHECK THE CIRCUIT BETWEEN THE INSTRUMENT CLUSTER AND THE DLC FOR CONTINUITY</p>  <p>VFE0033606</p>	<p>Disconnect connector C332 from instrument cluster.</p> <p>2 Measure the resistance between the instrument cluster, connector C332, pin 31, circuit 5-EC8A (BU/WH), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to J36.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>



DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

J36: CHECK THE CIRCUIT BETWEEN THE INSTRUMENT CLUSTER AND THE DLC FOR CONTINUITY

- 1 Measure the resistance between the instrument cluster, connector C332, pin 32, circuit 4-EC8A (GY/VT), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.

- Is a resistance of less than 2 Ohm registered?

→ **Yes**

- Vehicles without automatic clutch and gear-shift actuation:
GO to J37.
- Vehicles with automatic clutch and gearshift actuation:
GO to J41.

→ **No**

LOCATE and REPAIR the break in the circuit between the instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.

J37: PERFORM NETWORK TEST

NOTE: The number of modules connected to the CAN bus depends on the equipment levels of the vehicle. Therefore not every vehicle will have all the modules mentioned below.

- 1 Connect the ground cable to the battery.

- 2 Connect the diagnostic tool.

- 3 Disconnect a listed component, then perform the following test step:
 - Vehicles with ABS built up to 0312004 or vehicles with electronic stability program (ESP): Connector 303 from ABS module or ESP module
 - Vehicles with ABS built from 0412004 onwards: connector C304 from ABS module
 - Vehicles with automatic transmission: connector C428 from automatic transmission module

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

4 Select the vehicle with the diagnostic tester.

- Is it possible to establish communication with the PCM?

→ **Yes**

The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.

→ **No**

- If not all the listed components are disconnected:
Key in the OFF position. DISCONNECT the next component (go to test step 3).
- If all the listed components are disconnected:
GO to J38.

J38: CHECK THE CAN BUS FOR A SHORT TO VOLTAGE SUPPLY

1 Ignition switch in position 0.

2 Disconnect Vehicles with 1.6L diesel engine: connector C384 from PCM.

☐ Disconnect Vehicles with 2.0L petrol engine: connector C380 from PCM.

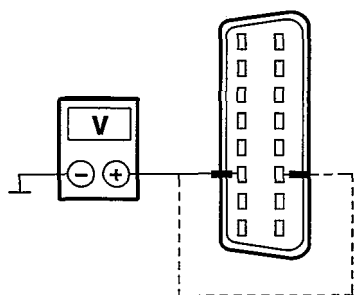
4 Disconnect Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR): connector C375 from PCM.

☐ Disconnect Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): connector C370 from PCM.

☐ Disconnect Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine: connector C343 from PCM.

7 Ignition switch in position II.

☐ Measure the voltage between the DLC, connector C308, pin 6, circuit 4-ECI (GY/RD), wiring harness side and ground.



VFE0038142

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and ground.

• Is a voltage measured?

→ **Yes**

LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

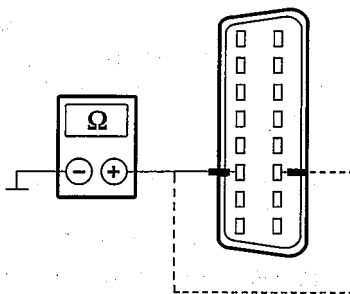
→ **No**

GO to J39.

J39: CHECK THE CAN BUS FOR A SHORT TO GROUND

- 1** Ignition switch in position 0.

- 2** Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.



VFE0038143

- 3** Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and ground.

- Is a resistance greater than 10,000 Ohms measured in both cases?

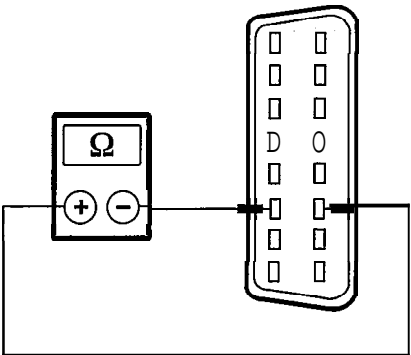
→ **Yes**

GO to J40.

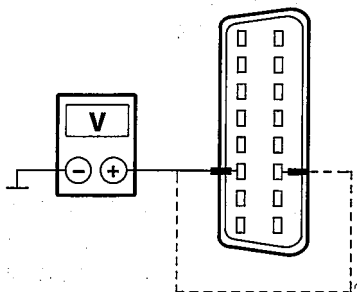
→ **No**

LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

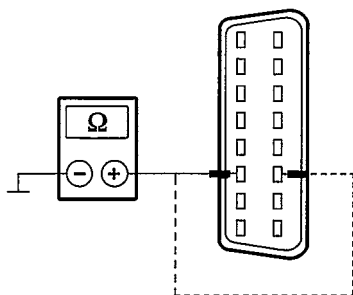
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>J40: CHECK THE CAN BUS FOR SHORT CIRCUIT</p>  <p>E45951</p>	<p>1 Measure the resistance at the DLC, connector C308, between pin 6, circuit 4-ECI (GY/RD), wiring harness side and pin 14, circuit 5-EC1 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 Ohms measured in both cases? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the short in the CAN Bus using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>J41: PERFORM NETWORK TEST</p>	<p>1 Connect the ground cable to the battery.</p> <p>2 Connect the diagnostic tool.</p> <p>3 Disconnect a listed component, then perform the following test step:</p> <ul style="list-style-type: none"> Vehicles with ABS built up to 0312004 or vehicles with electronic stability program (ESP): Connector 303 from ABS module or ESP module Vehicles with ABS built from 0412004 onwards: connector C304 from ABS module Vehicles with automatic clutch and gearshift actuation: connector C679 from transmission selector unit connector C332 from instrument cluster Connector C281 from the power steering pump module <p>4 Select the vehicle with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the PCM? <p>→ Yes The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> If not all the listed components are disconnected: Key in the OFF position. DISCONNECT the next component (go to test step 3). If all the listed components are disconnected: GO to J42.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J42: CHECK THE CAN BUS FOR A SHORT TO VOLTAGE SUPPLY	
 <p>VFE0038142</p>	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Disconnect connector C676 from transmission control module (TCM).</p> <p>3 Disconnect Vehicles with 1.6L diesel engine: connector C384 from PCM.</p> <p><input type="checkbox"/> Disconnect Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): connector C370 from PCM.</p> <p>5 Disconnect Vehicles with 1.4L petrol engine: connector C343 from PCM.</p>
	<p>6 Ignition switch in position II.</p>
	<p>7 Measure the voltage between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.</p>
	<p>8 Measure the voltage between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a voltage measured? <p>→ Yes LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No GO to J43.</p>
J43: CHECK THE CAN BUS FOR A SHORT TO GROUND	
	<p><input type="checkbox"/> Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0038143

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the DLC, connector C308, pin 6, circuit 4-ECI (GY/RD), wiring harness side and ground.

- 3** Measure the resistance between the DLC, connector C308, pin 14, circuit 5-ECI (BU/RD), wiring harness side and ground.

- Is a resistance greater than 10,000 Ohms measured in both cases?

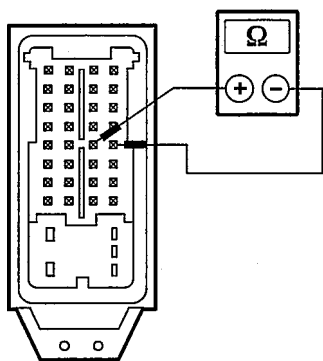
→ **Yes**

GO to J44.

→ **No**

LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

J44: CHECK THE TCM FOR BREAKS

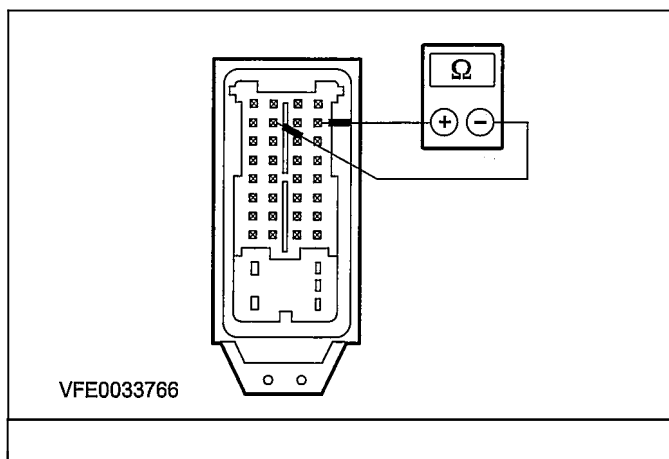


VFE0033765

- 1** Measure the resistance at TCM, connector C676, between pin 54 and pin 61, component side.

DIAGNOSIS AND TESTING

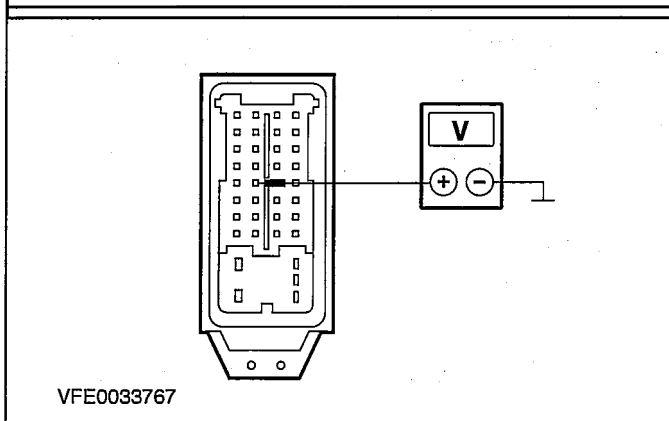
TEST CONDITIONS



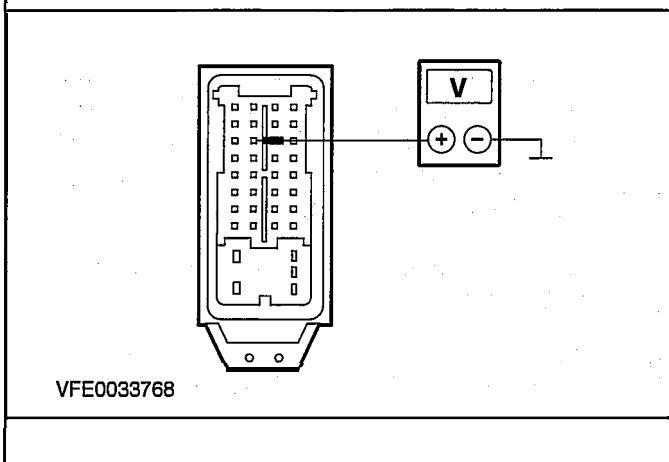
DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance at TCM, connector C676, between pin 56 and pin 63, component side.
- Is a resistance of less than 2 Ohms measured in both cases?
- **Yes**
GO to J45.
- **No**
CHECK the TCM and RENEW as necessary.
CHECK the operation of the system.

J45: CHECK THE CAN BUS BETWEEN TCM AND PCM FOR SHORT TO VOLTAGE

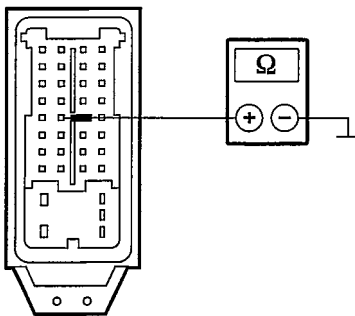
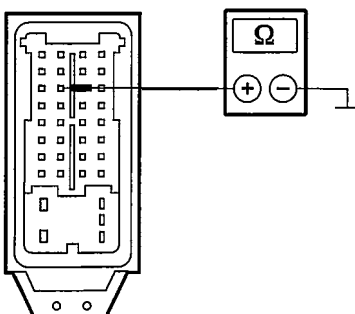
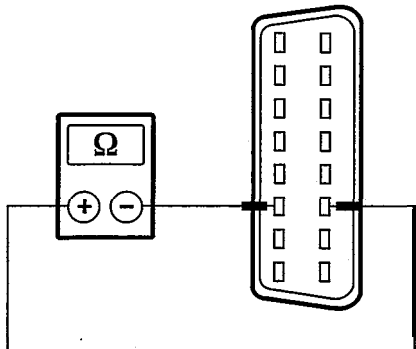


- Measure the voltage between the TCM, connector C676, pin 61, circuit 4-EC7 (GY/RD) and ground.



- 2 Measure the voltage between the TCM, connector C676, pin 63, circuit 5-EC7 (BU/RD) and ground.
- Is a voltage measured?
- **Yes**
LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams.
CHECK the operation of the system.
- **No**
GO to J46.

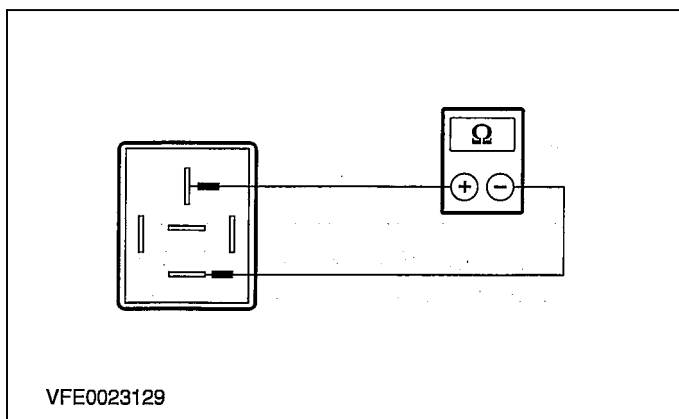
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>J46: CHECK THE CAN BUS BETWEEN TCM AND PCM FOR SHORT TO GROUND</p>  <p>VFE0033769</p>	<p>1 Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GY/RD) and ground.</p>
 <p>VFE0033770</p>	<p>2 Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BUIRD) and ground.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 Ohms measured in both cases? <p>→ Yes GO to J47.</p> <p>→ No LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>J47: CHECK THE CAN BUS FOR SHORT CIRCUIT</p>	
 <p>E45951</p>	<p>1 Measure the resistance at the DLC, connector C308, between pin 6, circuit 4-EC1 (GY/RD), wiring harness side and pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 Ohms measured in both cases? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the short in the CAN Bus using the Wiring Diagrams. CHECK the operation of the system.</p>

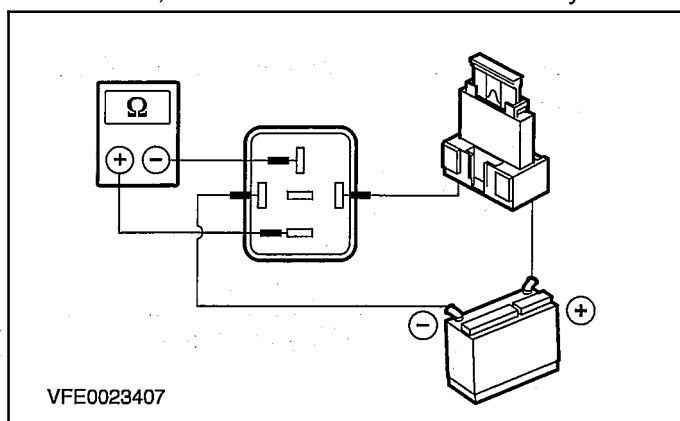
DIAGNOSIS AND TESTING

Component Tests

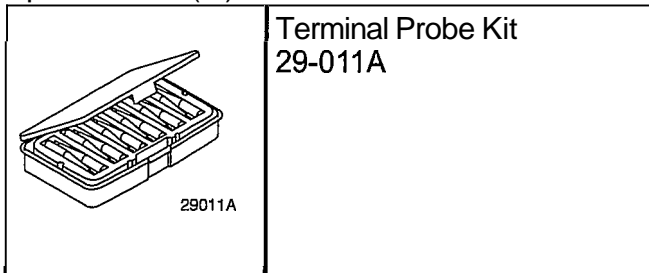
PCM module relay



1. Check the normally open contact in the unswitched state:
 1. Measure the resistance at the PCM module relay, between pin 3, component side and pin 5, component side.
 2. Is a resistance of more than 10,000 Ohm measured?
 3. If yes, go to 2.
 4. If no, RENEW the PCM module relay.



2. Check the normally open contact in the switched state:
 1. Use a fused test cable (1 A) to connect pin 1 of the PCM module relay, component side, to the battery positive terminal.
 2. Use a test cable to connect pin 2 of the PCM module relay, component side, to the battery negative terminal.
 3. Measure the resistance at the PCM module relay, between pin 3, component side and pin 5, component side.
 4. Is a resistance of less than 2 Ohm registered?
 5. If yes, then the PCM module relay is OK.
 6. If no, RENEW the PCM module relay.

DIAGNOSIS AND TESTING**Communications Network — Vehicles Built From: 1012005****Special Tool (~)**

Terminal Probe Kit
29-011A

General Equipment

Digital Multimeter

Worldwide Diagnostic System (WDS)

Visual Inspection**Electrical**

- Fuse(s).
- Wiring harness.
- Electrical connectors.

Inspection and Testing

1. CHECK the concern.
2. Visually CHECK for any obvious mechanical or electrical damage.
3. RECTIFY any obvious causes for a concern found during the visual inspection before performing any further tests. CHECK the operation of the system.
4. If the concern persists after the visual inspection, PERFORM a fault diagnosis with WDS and RECTIFY any displayed faults in accordance with the displayed fault description. CHECK the operation of the system.
5. For vehicles with no stored fault(s), PROCEED in accordance with the symptom chart according to the fault symptom.
6. Following checking or elimination of the fault and after completion of operations, the fault memories of all vehicle modules must be READ OUT and any stored faults must be DELETED. READ OUT all fault memories again following a road test.

Symptom chart**Symptom chart**

Symptom	Possible Sources	Action
• Bluetooth/voice control module not communicating with the diagnostic tester.	• Fuse(s). • Circuit(s). • Bluetooth/voice control module.	• GO to Pinpoint Test A.
• Generic electronic module (GEM) not communicating with the diagnostic tester.	• Fuse(s). • Circuit(s). • Generic electronic module (GEM).	• GO to Pinpoint Test G.
• ABS module or ESP module not communicating with the diagnostic tester.	• Fuse(s). • Circuit(s). • ABS module or ESP module.	• GO to Pinpoint Test E.
• Electronic automatic temperature control (EATC) module not communicating with diagnostic tester.	• Fuse(s). • Circuit(s). • Electronic automatic temperature control (EATC) module.	• GO to Pinpoint Test C.
• Powertrain control module (PCM) not communicating with the diagnostic tester	• Fuse(s). • Circuit(s). • PCM	• GO to Pinpoint Test H.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Restraints control module (RCM) not communicating with the diagnostic tester. 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Restraints control module (RCM). 	<ul style="list-style-type: none"> GO to Pinpoint Test D.
<ul style="list-style-type: none"> Audio system control panel not communicating with the diagnostic tester. 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Audio system control panel. 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
<ul style="list-style-type: none"> Power steering pump module not communicating with the diagnostic tester. 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Power steering pump module. 	<ul style="list-style-type: none"> GO to Pinpoint Test F.
<ul style="list-style-type: none"> Electronic instrument cluster not communicating with the diagnostic tester. 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). Electronic instrument cluster. 	<ul style="list-style-type: none"> GO to Pinpoint Test I.
<ul style="list-style-type: none"> Transmission control module (TCM) not communicating with the diagnostic tester. 	<ul style="list-style-type: none"> Fuse(s). Circuit(s). TCM. 	<ul style="list-style-type: none"> -Vehicles with automatic clutch and gearshift actuation:GO to Pinpoint Test J. - Vehicles with automatic transmission: GO to Pinpoint Test K.
<ul style="list-style-type: none"> Faulty communication between the modules (ISO 9141 bus). 	<ul style="list-style-type: none"> Circuit(s). Generic electronic module (GEM). Restraints control module (RCM). ABS module or ESP module. 	<ul style="list-style-type: none"> GO to Pinpoint Test L.
<ul style="list-style-type: none"> Faulty communication between the modules (HS CAN bus). 	<ul style="list-style-type: none"> Circuit(s). Electronic instrument cluster. ABS module or ESP module. Transmission control module (TCM) - vehicles with automatic clutch and gearshift actuation. Transmission selector unit - vehicles with automatic clutch and gearshift actuation. Transmission control unit (TCM) - vehicles with automatic transmission Power steering pump module. Powertrain control module (PCM). 	<ul style="list-style-type: none"> GO to Pinpoint Test M.
<ul style="list-style-type: none"> Faulty communication between the modules (MS CAN bus). 	<ul style="list-style-type: none"> Circuit(s). Electronic instrument cluster. Audio system control panel. Electronic automatic temperature control (EATC) module. Generic electronic module (GEM). Bluetooth/voice control module. 	<ul style="list-style-type: none"> GO to Pinpoint Test N.

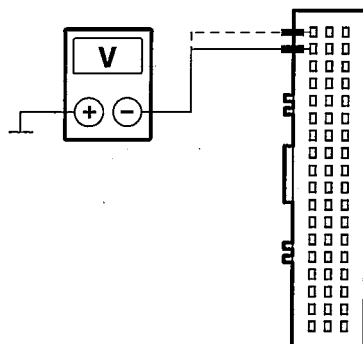
DIAGNOSIS AND TESTING**Pinpoint Tests**

PINPOINT TEST K : BLUETOOTH/VOICE CONTROL MODULE NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK COMMUNICATIONS WITH THE GENERIC ELECTRONIC MODULE (GEM)	
	<input type="checkbox"/> Ignition switch in position 0. <input type="checkbox"/> Connect the diagnostic tool. <input type="checkbox"/> Select the generic electronic module (GEM) with the diagnostic tester. <ul style="list-style-type: none"> Is it possible to establish communication with the GEM? → Yes GO to A2. → No GO to Pinpoint Test N.
A2: CHECK FUSE F18	
	<ol style="list-style-type: none"> Ignition switch in position 0. CHECK fuse F18 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to A3. → No RENEW fuse F18 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
A3: CHECK THE VOLTAGE AT FUSE F18	
	<ol style="list-style-type: none"> Connect fuse F18 (CJB). <input type="checkbox"/> Measure the voltage between fuse F18 (15 A) and ground. <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to A4. → No REPAIR the voltage supply to fuse F18 using the Wiring Diagrams. CHECK the operation of the system.
A4: CHECK THE VOLTAGE AT THE BLUETOOTH/VOICE CONTROL MODULE	
	<ol style="list-style-type: none"> Disconnect Connector C796 from bluetooth/voice control module.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E61587

DETAILS RESULTS ACTIONS

- 2 Measure the voltage between the bluetooth/voice control module, connector C796, pin 17, circuit 29-MC12A (OG/YE), wiring harness side and ground.

- 3 Measure the voltage between the bluetooth/voice control module, connector C796, pin 18, circuit 29-MC12 (OGNE), wiring harness side and ground.

- Is battery voltage measured in both cases?

→ **Yes**

GO to A5.

→ **No**

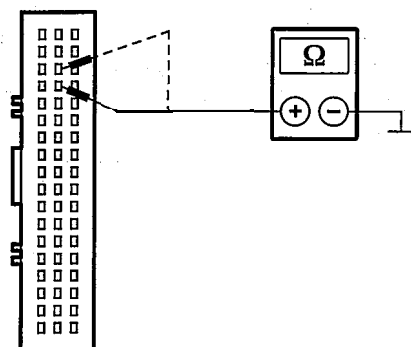
- If battery voltage is not measured during one measurement:

LOCATE and RECTIFY the break in the affected circuit between the bluetooth/voice control module and soldered connection S384 using the Wiring Diagrams. CHECK the operation of the system.

- If battery voltage is not measured during both measurements:

LOCATE and RECTIFY the break in the circuit between soldered connection S384 and the CJB using the Wiring Diagrams. CHECK the operation of the system.

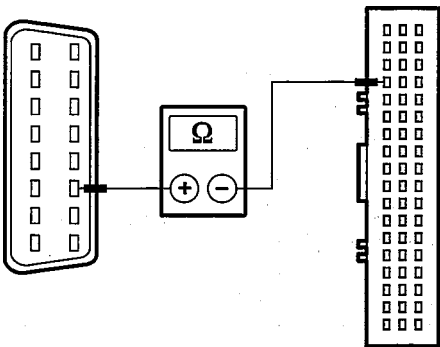
A5: CHECK THE GROUND CONNECTION AT THE BLUETOOTH/VOICE CONTROL MODULE



E61589

- 1 Measure the resistance between the bluetooth/voice control module, connector C796, pin 33, circuit 91-MC12A (BK/YE), wiring harness side and ground.

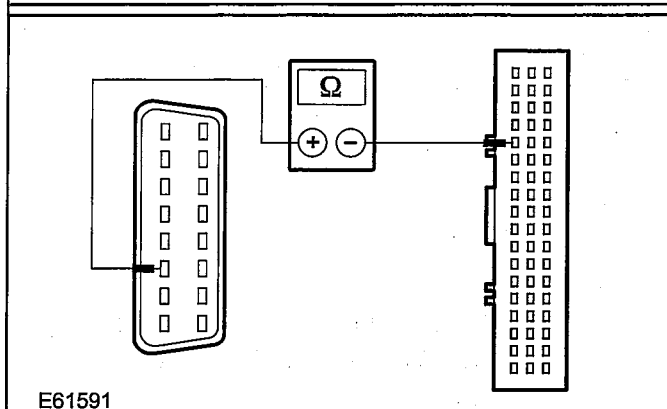
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>2 Measure the resistance between the bluetooth/voice control module, connector C796, pin 34, circuit 91-MC12 (BK/YE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms measured in both cases? <p>→ Yes GO to A6.</p> <p>→ No</p> <ul style="list-style-type: none"> If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and RECTIFY the break in the affected circuit between the bluetooth/voice control module and soldered connection S387 using the Wiring Diagrams. CHECK the operation of the system. If a resistance greater than 2 Ohm is measured in both cases: LOCATE and RECTIFY the open circuit in the relevant circuit between soldered connection S387 and ground connection G12 using the Wiring Diagrams. CHECK the operation of the system.
A6: CHECK FOR OPEN CIRCUIT BETWEEN THE BLUETOOTH/VOICE CONTROL MODULE AND THE DATA LINK CONNECTOR (DLC)	
 <p>E61590</p>	<p>1 Measure the resistance between the bluetooth/voice control module, connector C796, pin 15, circuit 5-XL10A (BU), wiring harness side and the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to A7.</p> <p>→ No LOCATE and REPAIR the break in circuit 5-XL10A (BU) between the bluetooth/voice control module and soldered connection S382 using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

A7: CHECK FOR OPEN CIRCUIT BETWEEN THE BLUETOOTH/VOICE CONTROL MODULE AND THE DLC

- 1 Measure the resistance between the bluetooth/voice control module, connector C796, pin 14, circuit 4-XL10A (GY), wiring harness side and the DLC, connector C308, pin 3, circuit 4-EC2 (GY/RD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK and if necessary RENEW the bluetooth/voice control module. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in circuit 4-XL10A (GY) between the bluetooth/voice control module and soldered connection S383 using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST L : AUDIO SYSTEM CONTROL PANEL NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER.

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B1: CHECK COMMUNICATIONS WITH THE GENERIC ELECTRONIC MODULE (GEM)

- 1 Ignition switch in position 0.

- 2 Connect the diagnostic tool.

- 3 Select the generic electronic module (GEM) with the diagnostic tester.

- Is it possible to establish communication with the GEM via the MS CAN BUS?

→ **Yes**

GO to B2.

→ **No**

GO to Pinpoint Test N.

B2: CHECK FUSE F18

- 1 CHECK fuse F18 (CJB).

- Is the fuse OK?

→ **Yes**

GO to B3.

→ **No**

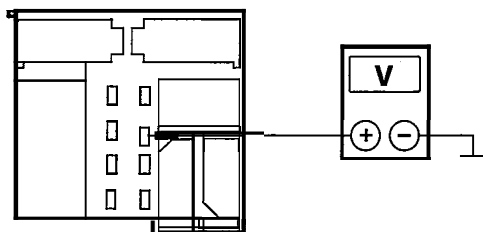
RENEW fuse F18 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B3: CHECK THE VOLTAGE AT FUSE F18	
	<input type="checkbox"/> 1 Connect fuse F18 (CJB).
	<input type="checkbox"/> 2 Measure the voltage between fuse F18 (15 A) and ground. <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to B4. → No REPAIR the voltage supply to fuse F18 using the Wiring Diagrams. CHECK the operation of the system.
B4: CHECK FUSE F44	
	<input type="checkbox"/> 1 CHECK fuse F44 (CJB).
	<ul style="list-style-type: none"> Is the fuse OK? → Yes GO to B5. → No RENEW fuse F44 (3 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
B5: CHECK THE VOLTAGE AT FUSE F44	
	<input type="checkbox"/> 1 Connect fuse F44 (CJB).
	<input type="checkbox"/> 2 Ignition switch in position I.
	<input type="checkbox"/> 3 Measure the voltage between fuse F44 (3 A) and ground. <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to B6. → No REPAIR the voltage supply to fuse F44 using the Wiring Diagrams. CHECK the operation of the system.
B6: CHECK VOLTAGE AT AUDIO SYSTEM CONTROL PANEL	
	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> Disconnect connector C775 from audio system control panel.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E54982

DETAILS RESULTS ACTIONS

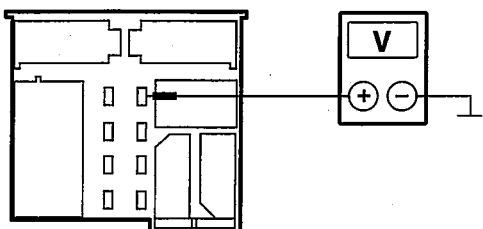
Measure the voltage between the audio system control panel, connector C775, pin 15, circuit 29-MD15 (OG/BK), wiring harness side and ground.

- Is battery voltage measured?

→ **Yes**
GO to B7.

→ **No**
LOCATE and REPAIR the open circuit between the audio/navigation control panel and fuse F18 using the Wiring Diagrams. CHECK the operation of the system.

B7: CHECK VOLTAGE AT AUDIO SYSTEM CONTROL PANEL



E54983

1 Ignition switch in position I.

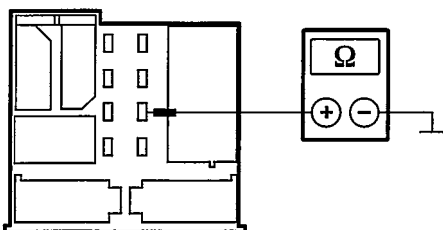
2 Measure the voltage between the audio system control panel, connector C775, pin 16, circuit 75-MD15 (YE/GN), wiring harness side and ground.

- Is battery voltage measured?

→ **Yes**
GO to B8.

→ **No**
LOCATE and REPAIR the open circuit between the audio system control panel and fuse F44 using the Wiring Diagrams. CHECK the operation of the system.

B8: CHECK GROUND CONNECTION OF AUDIO SYSTEM CONTROL PANEL



E61594

1 Ignition switch in position 0.

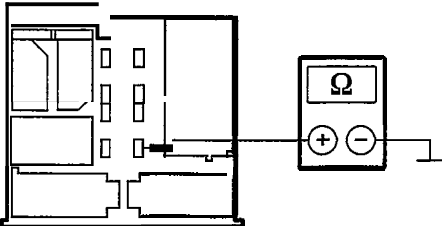
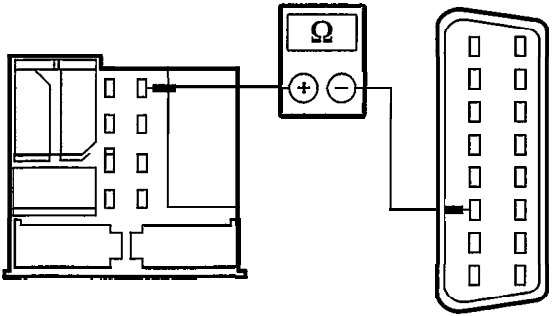
2 Measure the resistance between the audio system control panel, connector C775, pin 11, circuit 91-MD34 (BK/YE), wiring harness side and ground.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**
GO to B9.

→ **No**
LOCATE and REPAIR the relevant open circuit between the audio system control panel and ground connection G12 using the Wiring Diagrams. CHECK the operation of the system.

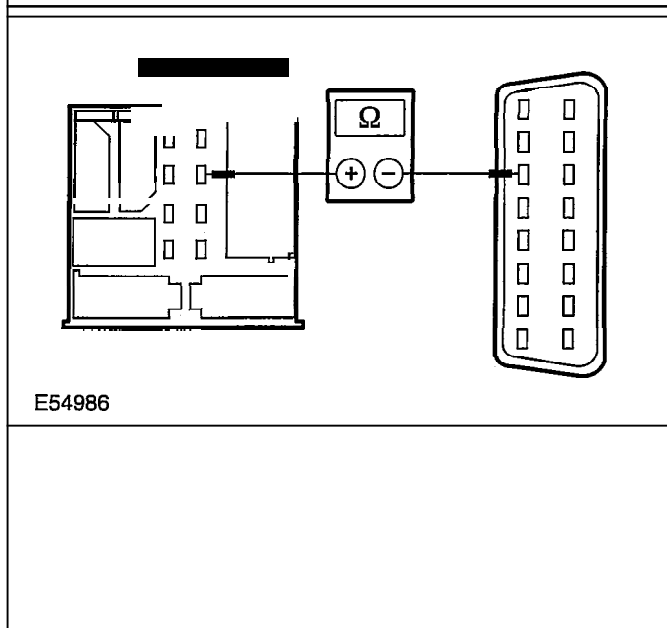
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>B9: CHECK GROUND CONNECTION OF AUDIO SYSTEM CONTROL PANEL</p>  <p>E54984</p>	<p>Measure the resistance between the audio system control panel, connector C775, pin 12, circuit 91-MDI5 (BWGN), wiring harness side and ground.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to B10.</p> <p>→ No LOCATE and REPAIR the relevant open circuit between the audio system control panel and ground connection G16 using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>B10: CHECK FOR OPEN CIRCUIT BETWEEN THE AUDIO SYSTEM CONTROL PANEL AND THE DLC</p>  <p>E54985</p>	<p>Measure the resistance between the audio system control panel, connector C775, pin 9, circuit 4-XL10 (GY), wiring harness side and the DLC, connector C308, pin 3, circuit 4-EC2 (GY/RD), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to B11.</p> <p>→ No LOCATE and REPAIR the open circuit between the audio system control panel and soldered connection S286 using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

B11: CHECK FOR OPEN CIRCUIT BETWEEN THE AUDIO SYSTEM CONTROL PANEL AND THE DLC

- 1 Measure the resistance between the audio system control panel, connector C775, pin 10, circuit 5-XL10 (BU), wiring harness side and the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK and if necessary RENEW the audio system control panel. CHECK the operation of the system.

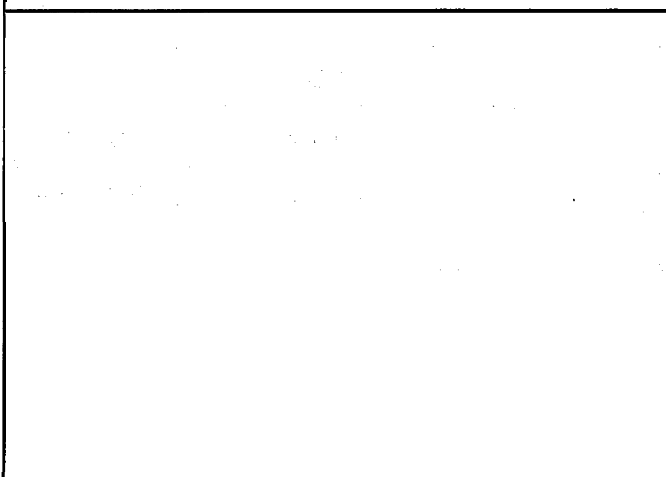
→ **No**

LOCATE and REPAIR the open circuit between the audio system control panel and soldered connection S285 using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST M : ELECTRONIC AUTOMATIC TEMPERATURE CONTROL (EATC) MODULE NOT COMMUNICATING WITH DIAGNOSTIC TESTER.

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

C1: CHECK COMMUNICATION WITH THE GENERIC ELECTRONIC MODULE (GEM)

- 1 Ignition switch in position 0.

- 2 Connect the diagnostic tool.

- ☐ Select the generic electronic module (GEM) with the diagnostic tester.

- Is it possible to establish communication with the GEM?

→ **Yes**

GO to C2.

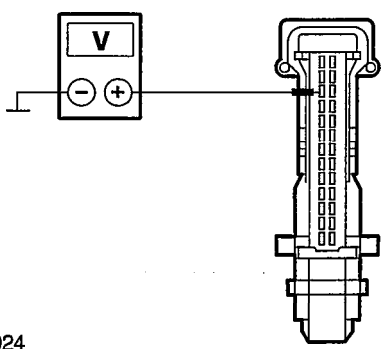
→ **No**

GO to Pinpoint Test N.

C2: CHECK FUSE F4

- 1 Ignition switch in position 0.

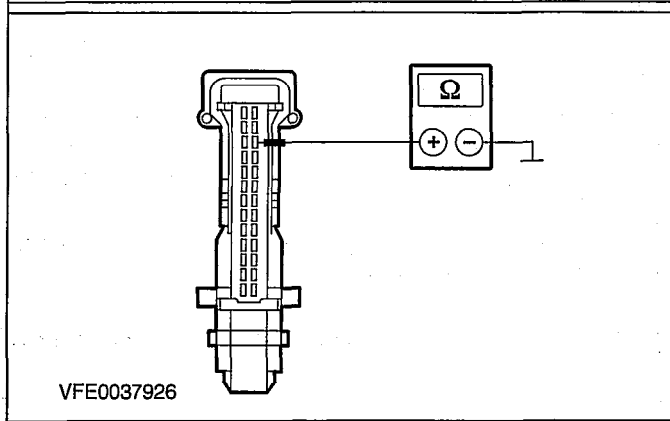
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>2 CHECK fuse F4 (BJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to C3.</p> <p>→ No RENEW fuse F4 (10 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
C3: CHECK THE VOLTAGE AT FUSE F4	
	<p>1 Connect fuse F4 (BJB).</p> <p>2 Measure the voltage between fuse F4 (10 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to C4.</p> <p>→ No REPAIR the voltage supply to fuse F4 using the Wiring Diagrams. CHECK the operation of the system.</p>
C4: CHECK VOLTAGE AT THE EATC MODULE	
 <p>VFE0037924</p>	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Connector C366 from EATC module.</p> <p>3 Measure the voltage between the EATC module, connector C366, pin 11, circuit 29-FA43 (OG/WH), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to C5.</p> <p>→ No LOCATE and REPAIR the open circuit between the EATC module and fuse F4 using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

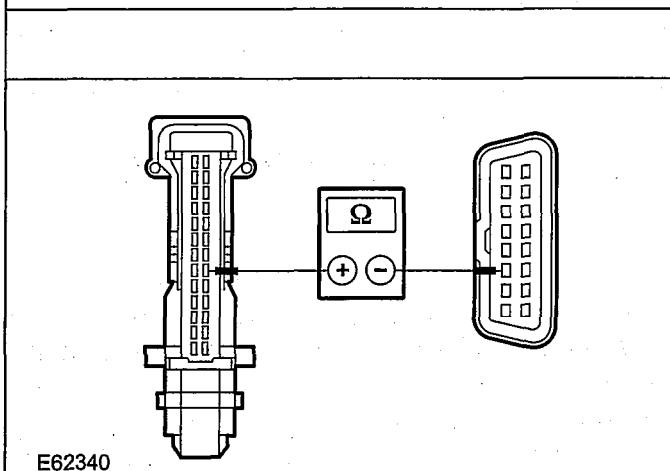
DETAILS/RESULTS/ACTIONS

C5: CHECK GROUND CONNECTION OF THE EATC MODULE

- 1 Measure the resistance between the EATC module, connector C366, pin 24, circuit 31-FA43 (BK), wiring harness side and ground.
 - Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to C6.
 - **No**
LOCATE and REPAIR the break in the affected circuit between the EATC module and ground connection G12 using the Wiring Diagrams. CHECK the operation of the system.

C6: CHECK FOR OPEN CIRCUIT BETWEEN THE EATC MODULE AND THE DATA LINK CONNECTOR (DLC)

⚠ CAUTION: The following measurement may only be performed using the WDS digital multi-meter. Failure to observe this instruction can lead to damage.

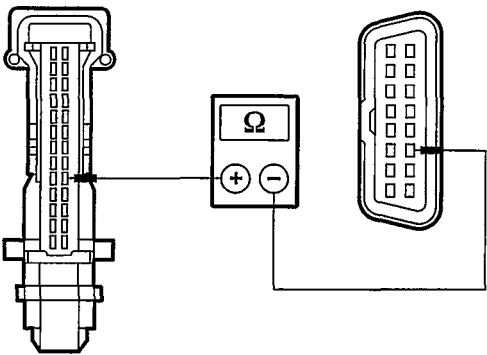


- 1 Disconnect Connector C367 from EATC module.
- 2 Measure the resistance between the EATC module, connector C367, pin 19, circuit 5-EC10 (BU), wiring harness side and the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side.

Is a resistance of less than 2 Ohms registered?

 - **Yes**
GO to C7.
 - **No**
LOCATE and RECTIFY the break in circuit 5-EC10 (BU) between the EATC module and soldered connection S287 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C7: CHECK FOR OPEN CIRCUIT BETWEEN THE EATC MODULE AND THE DLC	
<p>CAUTION: The following measurement may only be performed using the WDS digital multi-meter. Failure to observe this instruction can lead to damage.</p>	
 <p>E62341</p>	<p><input type="checkbox"/> Measure the resistance between the EATC module, connector C367, pin 18, circuit 4-EC10 (GY), wiring harness side and the DLC, connector C308, pin 3, circuit 4-EC2 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK and if necessary RENEW the EATC module. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in circuit 4-EC10 (GY) between the EATC module and soldered connection S289 using the Wiring Diagrams. CHECK the operation of the system.</p>

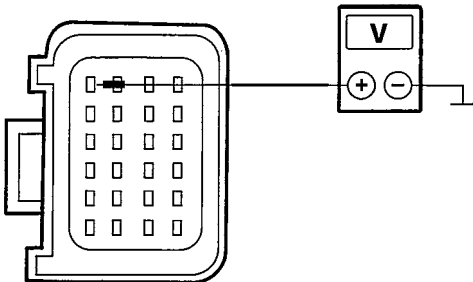
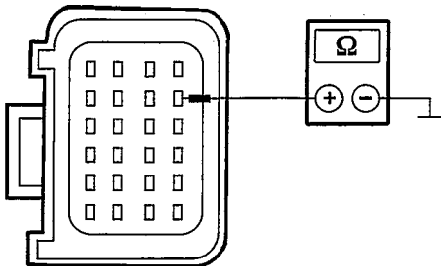
PINPOINT TEST N : RESTRAINTS CONTROL MODULE (RCM) NOT COMMUNICATING **WITH** THE DIAGNOSTIC TESTER.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>WARNINGS:</p> <p>▲ The backup power supply must be depleted to prevent the risk of accidental airbag deployment. After disconnecting the battery, wait at least 1 minute before starting work on the safety restraint system. Failure to follow these instructions may result in personal injury.</p> <p>▲ Do not program any keycodes while working on the safety restraint system in order to prevent the risk of accidental deployment of safety restraint system components. Failure to follow these instructions may result in personal injury.</p> <p>▲ Only test the connectors of airbags or other safety restraint systems using the correct test probe adapter. Failure to follow these instructions may result in personal injury.</p>	
DI: DETERMINE THE FAULT CONDITION	
	<p><input checked="" type="checkbox"/> 1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Connect the diagnostic tool.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Select the generic electronic module (GEM) with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the GEM? <p>→ Yes GO to D2.</p> <p>→ No GO to Pinpoint Test L.</p>
D2: CHECK FUSE F39	
	<p>1 Ignition switch in position 0.</p> <p>2 CHECK fuse F39 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to D3.</p> <p>→ No RENEW fuse F39 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
D3: CHECK THE VOLTAGE AT FUSE F39	
	<p>1 Connect fuse F39 (CJB).</p> <p>2 Ignition switch in position II.</p> <p>3 Measure the voltage between fuse F39 (7.5 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to D4.</p> <p>→ No REPAIR the voltage supply to fuse F39 using the Wiring Diagrams. CHECK the operation of the system.</p>
D4: CHECK THE VOLTAGE AT THE RESTRAINTS CONTROL MODULE (RCM)	
	<p>1 Ignition switch in position 0.</p> <div style="background-color: black; height: 77px; width: 428px;"></div> <p><input type="checkbox"/> Connect the ground cable to the battery.</p> <p>5 Ignition switch in position II.</p>

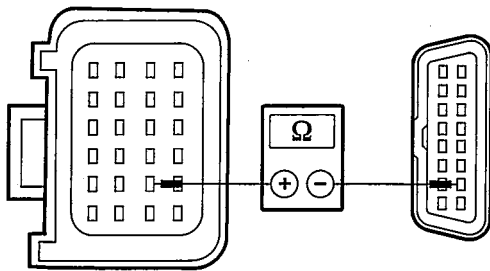
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0028954</p>	<p>6 Measure the voltage between the restraints control module (RCM), connector C500 (vehicles built for Japan: connector C500A), pin 1, circuit 15-JA10 (GN/OG), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to D5.</p> <p>→ No LOCATE and REPAIR the break in circuit 15-JA10 (GN/OG) between the restraints control module (RCM) and fuse F39 using the Wiring Diagrams. CHECK the operation of the system.</p>
D5: CHECK THE GROUND CONNECTION OF THE RESTRAINTS CONTROL MODULE (RCM)	
 <p>VFE0028956</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Measure the resistance between the restraints control module (RCM), connector C500 (vehicles built for Japan: connector C500A), pin 20, circuit 91-JA10 (BWRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to D6.</p> <p>→ No LOCATE and REPAIR the break in circuit 91-JA10 (BWRD) between the restraints control module (RCM) and ground connection G21 using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

D6: CHECK FOR OPEN CIRCUIT BETWEEN THE RESTRAINTS CONTROL MODULE (RCM) AND THE DATA LINK CONNECTOR (DLC)

VFE0033752

- 1 Measure the resistance between the restraints control module (RCM), connector C500 (vehicles built for Japan: connector C500A), pin 17, circuit 4-EE7 (GYIRD), wiring harness side and the DLC, C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side.

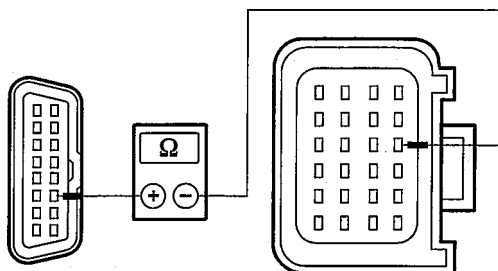
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to D7.

→ **No**

LOCATE and REPAIR the break in circuit 4-EE7 (GYIRD) between the restraints control module (RCM) and soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

D7: CHECK FOR OPEN CIRCUIT BETWEEN THE RESTRAINTS CONTROL MODULE (RCM) AND THE DLC

E65372

- 1 Measure the resistance between the DLC, connector C308, pin 11, circuit 5-EC2 (BUIRD), wiring harness side and the restraints control module (RCM), connector C500 (vehicles built for Japan: connector C500A), pin 4, circuit 5-XL11 (BUIRD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

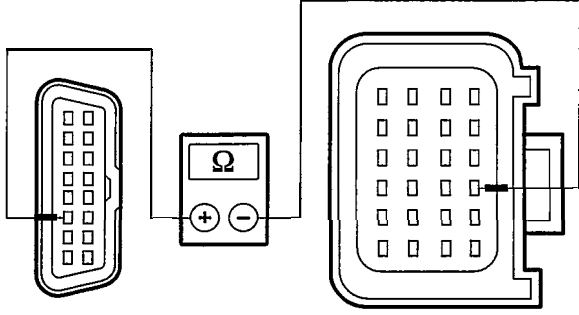
→ **Yes**

GO to D8.

→ **No**

LOCATE and REPAIR the break in circuit 5-XL11 (BUIRD) between the restraints control module (RCM) and soldered connection S279 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D8: CHECK FOR OPEN CIRCUIT BETWEEN THE RESTRAINTS CONTROL MODULE (RCM) AND THE DLC	
 <p>E65373</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the DLC, connector C308, pin 3, circuit 4-EC2 (GYIRD), wiring harness side and the restraints control module (RCM), connector C500 (vehicles built for Japan: connector C500A), pin 3, circuit 4-XL11 (GYIRD), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <ul style="list-style-type: none"> → Yes CHECK and if necessary RENEW the restraints control module (RCM). CHECK the operation of the system. → No LOCATE and REPAIR the break in circuit 4-XL11 (GYIRD) between the restraints control module (RCM) and soldered connection S288 using the Wiring Diagrams. CHECK the operation of the system.

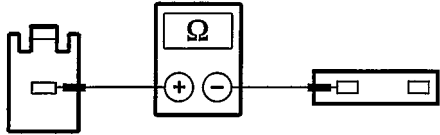
PINPOINT TEST O : ABS MODULE OR ESP MODULE NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: DETERMINE THE FAULT CONDITION	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Connect the diagnostic tool. 3 Select the generic electronic module (GEM) with the diagnostic tester. <ul style="list-style-type: none"> • Is it possible to establish communication with the GEM? <ul style="list-style-type: none"> → Yes GO to E2. → No GO to Pinpoint Test L.
E2: CHECK FUSE F5	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0.

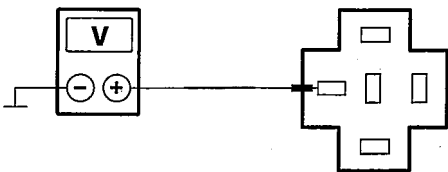
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div>2</div> CHECK fuse F5 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to E3. → No RENEW fuse F5 (20 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
E3: CHECK THE VOLTAGE AT FUSE F5	
	<div>1</div> Connect fuse F5 (CJB). <div>2</div> Measure the voltage between fuse F5 (20 A) and ground. <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to E7. → No GO to E4.
E4: CHECK FUSE FH	
	<div>1</div> Ignition switch in position 0. <div>A</div> CHECK fuse FH (BJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to E5. → No RENEW fuse FH (60 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
E5: CHECK THE VOLTAGE AT FUSE FH	
	<div>1</div> Connect fuse FH (BJB). <div>2</div> Measure the voltage between fuse FH (60 A) and ground. <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to E6. → No REPAIR the voltage supply to fuse FH using the Wiring Diagrams. CHECK the operation of the system.

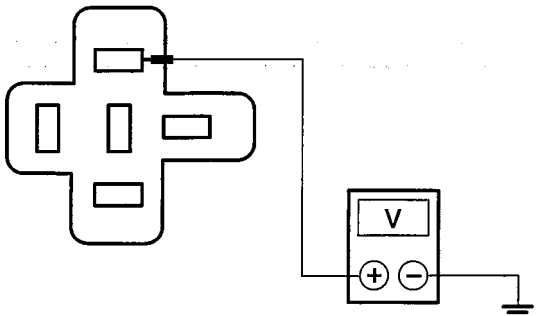
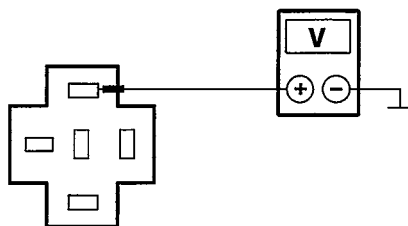
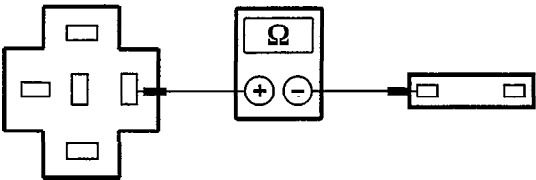
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E6: CHECK FOR OPEN CIRCUIT BETWEEN FUSE FH AND FUSE F5	
 <p>E51763</p>	<input type="checkbox"/> Disconnect connector C1001 from BJB.
	<p>2 Measure resistance between BJB, connector C1001, circuit 30-DB5 (RD), wiring harness side and fuse F5 (CJB), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the BJB and INSTALL a new one as necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in circuit 30-DB8 (RD) between fuse FH and fuse F5 using the Wiring Diagrams. CHECK the operation of the system.</p>
E7: CHECK FUSE F37	
	<p>1 CHECK fuse F37 (CJB).</p>
	<ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to E8.</p> <p>→ No RENEW fuse F37 (3 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
E8: CHECK THE VOLTAGE AT FUSE F37	
	<p>1 Connect fuse F37 (CJB).</p>
	<p>Ignition switch in position II.</p> <p>3 Measure the voltage between fuse F37 (3 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles with ABS and electronic stability program (ESP): GO to E15. Vehicles with ABS without electronic stability program (ESP): GO to E22. <p>→ No GO to E9.</p>
E9: CHECK THE VOLTAGE AT THE IGNITION RELAY	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>VFE0037103</p>	<p>2 Disconnect ignition relay from socket C328.</p> <p>3 Measure the voltage between the ignition relay, socket C328, pin 3, circuit 30-BB8 (RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to E12.</p> <p>→ No GO to E10.</p>
E10: CHECK FUSE FF	
	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>CHECK fuse FF (BJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to E11.</p> <p>→ No RENEW fuse FF (60 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
E11: CHECK THE VOLTAGE AT FUSE FF	
	<p>1 Connect fuse FF (BJB).</p> <p>2 Measure the voltage between fuse FF (60 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes LOCATE and REPAIR the break in circuit 30-BB8 (RD) between the ignition relay and fuse FF using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No REPAIR the voltage supply to fuse FF using the Wiring Diagrams. CHECK the operation of the system.</p>
E12: CHECK THE VOLTAGE AT THE IGNITION RELAY	
	<p>1 Ignition switch in position II.</p>

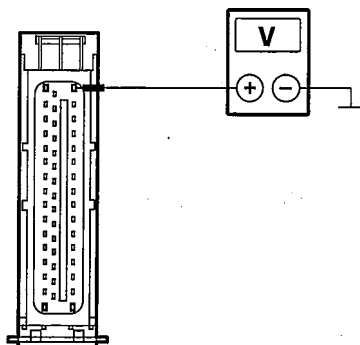
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>V3201467</p>	<p>2 Measure the voltage between the ignition relay, socket C328, pin 1, circuit 15-BB7 (GN/BU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to E13.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the ignition relay and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.</p>
E13: CHECK GROUND CONNECTION AT IGNITION RELAY	
 <p>VFE0037106</p>	<p>1 Measure the resistance between the ignition relay, socket C328, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to E14.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the ignition relay and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.</p>
E14: CHECK CIRCUIT BETWEEN THE IGNITION RELAY AND FUSE F37 FOR OPEN CIRCUIT	
 <p>E47287</p>	<p>Measure the resistance between the ignition relay, socket C328, pin 5, circuit 15-DB2 (GN/BU), wiring harness side and fuse F37 (CJB).</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK and if necessary RENEW the ignition relay. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the open circuit between the ignition relay and fuse F37 using the Wiring Diagrams. CHECK the operation of the system.</p>
E15: CHECK THE VOLTAGE AT THE ELECTRONIC STABILITY PROGRAM MODULE	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Connector C303 from electronic stability program module..</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

VFE0028952



DETAILS RESULTS ACTIONS

- 3 Measure the voltage between the electronic stability program module, connector C303, pin 32, circuit 29-CF6 (OGNE), wiring harness side and ground.

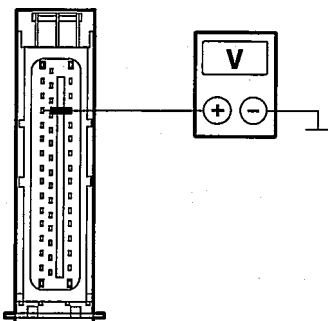
- Is battery voltage measured?

→ **Yes**
GO to E16.

→ **No**
LOCATE and REPAIR the break in circuit 29-CF6 (OGNE) between the electronic stability program module and fuse F5 using the Wiring Diagrams. CHECK the operation of the system.

E16: CHECK THE VOLTAGE AT THE ELECTRONIC STABILITY PROGRAM MODULE

VFE0028953



- 1 Ignition switch in position II.

- 2 Measure the voltage between the electronic stability program module, connector C303, pin 4, circuit 15-CF6 (GNNE), wiring harness side and ground.

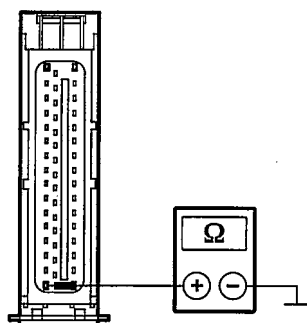
- Is battery voltage measured?

→ **Yes**
GO to E17.

→ **No**
LOCATE and REPAIR the break in circuit 15-CF6 (GNNE) between the electronic stability program module and fuse F37 using the Wiring Diagrams. CHECK the operation of the system.

E17: CHECK THE GROUND CONNECTION OF THE ELECTRONIC STABILITY PROGRAM MODULE

VFE0028950



- 1 Ignition switch in position 0.

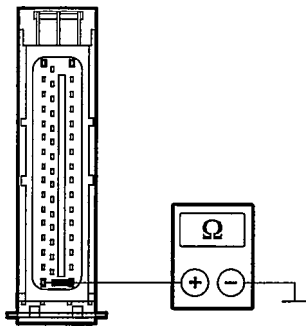
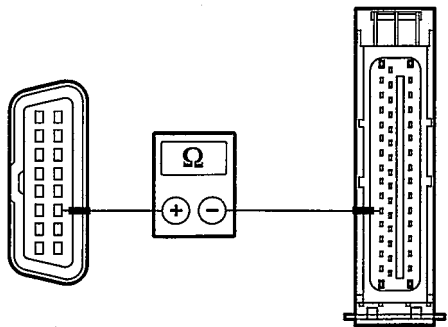
- 2 Measure the resistance between the electronic stability program module, connector C303, pin 47, circuit 31-CF13 (BK), wiring harness side and ground.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**
GO to E18.

→ **No**
LOCATE and REPAIR the break in circuit 31-CF13 (BK) between the electronic stability program module and ground connection G23 using the Wiring Diagrams. CHECK the operation of the system.

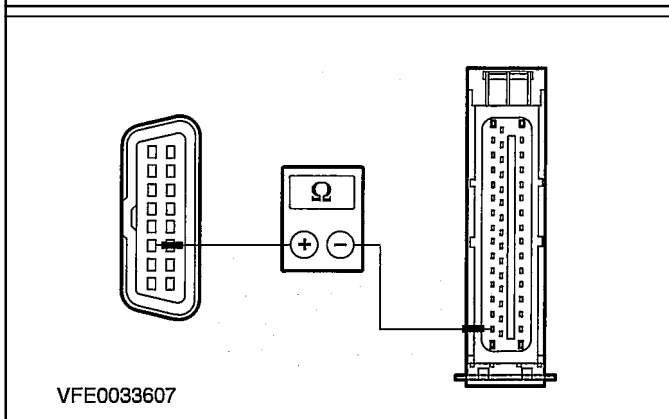
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>E18: CHECK THE GROUND CONNECTION OF THE ELECTRONIC STABILITY PROGRAM MODULE</p>  <p>VFE0028950</p>	<p>1 Measure the resistance between the electronic stability program module, connector C303, pin 16, circuit 31-CF6 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none">• Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to E19.</p> <p>→ No LOCATE and REPAIR the break in circuit 31-CF6 (BK) between the electronic stability program module and ground connection G23 using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>E19: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC STABILITY PROGRAM MODULE AND THE DLC</p>  <p>VFE0033604</p>	<p>1 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and the electronic stability program module, connector C303, pin 11, circuit 4-EC9 (GY), wiring harness side.</p> <ul style="list-style-type: none">• Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to E20.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the electronic stability program module and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

E20: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC STABILITY PROGRAM MODULE AND THE DLC

- 1 Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and the electronic stability program module, connector C303, pin 15, circuit 5-EC9 (BU), wiring harness side.

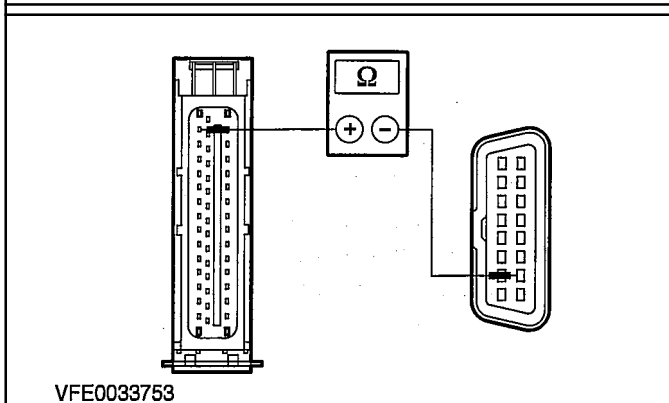
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to E21.

→ **No**

LOCATE and REPAIR the break in the circuit between the electronic stability program module and the DLC using the Wiring Diagrams. CHECK the operation of the system.

E21: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC STABILITY PROGRAM MODULE AND THE DATA LINK CONNECTOR (DLC)

- 1 Measure the resistance between the electronic stability program module, connector C303, pin 2, circuit 4-EE6 (GY), wiring harness side and DLC, connector C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK and if necessary RENEW the electronic stability program module. CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in the circuit between the electronic stability program module and soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

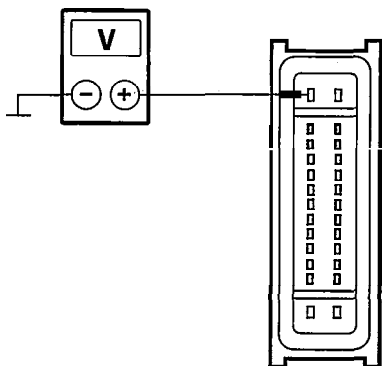
E22: CHECK THE VOLTAGE AT THE ABS MODULE

- 1 Ignition switch in position 0.

- 2 Disconnect connector C304 from ABS module.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E51764

DETAILS/RESULTS/ACTIONS

Measure the voltage between the ABS module, connector C304, pin 1, circuit 29-CF6 (OGNE), wiring harness side and ground.

- Is battery voltage measured?

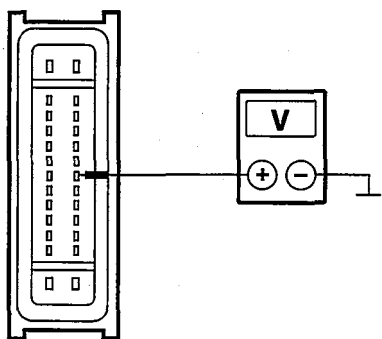
→ **Yes**

GO to E23.

→ **No**

LOCATE and REPAIR the break in circuit 29-CF6 (OGNE) between the ABS module and fuse F5 using the Wiring Diagrams. CHECK the operation of the system.

E23: CHECK THE VOLTAGE AT THE ABS MODULE



E51765

- ☐ Ignition switch in position II.

- 2 Measure the voltage between the ABS module, connector C304, pin 20, circuit 15-CF6 (GNNE), wiring harness side and ground.

- Is battery voltage measured?

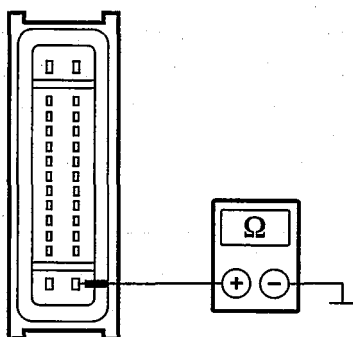
→ **Yes**

GO to E24.

→ **No**

LOCATE and REPAIR the break in circuit 15-CF6 (GNNE) between the ABS module and fuse F37 using the Wiring Diagrams. CHECK the operation of the system.

E24: CHECK THE GROUND CONNECTION OF THE ABS MODULE



E51766

- 1 Ignition switch in position 0.

- 1 Measure the resistance between the ABS module, connector C304, pin 26, circuit 31-CF6 (BK), wiring harness side and ground.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to E25.

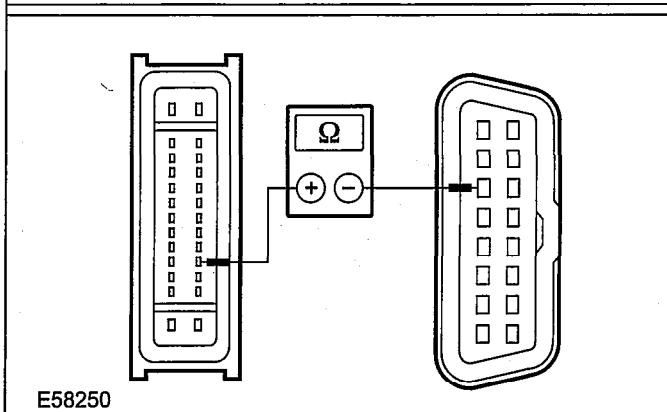
→ **No**

LOCATE and REPAIR the break in circuit 31-CF6 (BK) between the ABS module and ground connection G23 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

E25: CHECK FOR OPEN CIRCUIT BETWEEN THE ABS MODULE AND THE DLC

- 1 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and the ABS module, connector C304, pin 23, circuit 4-EC9 (GY), wiring harness side.

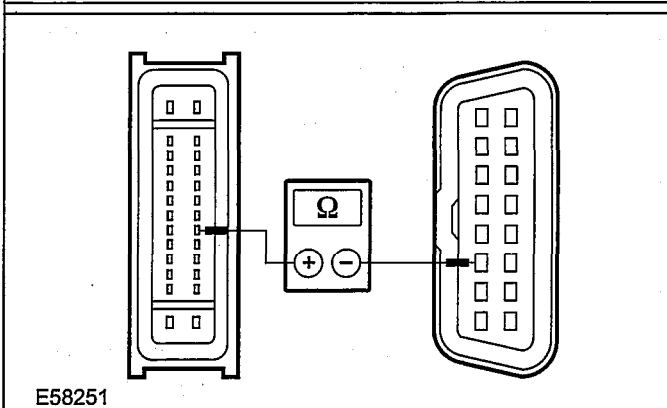
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to E26.

→ **No**

LOCATE and REPAIR the break in the circuit between the ABS module and the DLC using the Wiring Diagrams. CHECK the operation of the system.

E26: CHECK FOR OPEN CIRCUIT BETWEEN THE ABS MODULE AND THE DLC

- 1 Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and the ABS module, connector C304, pin 21, circuit 5-EC9 (BU), wiring harness side.

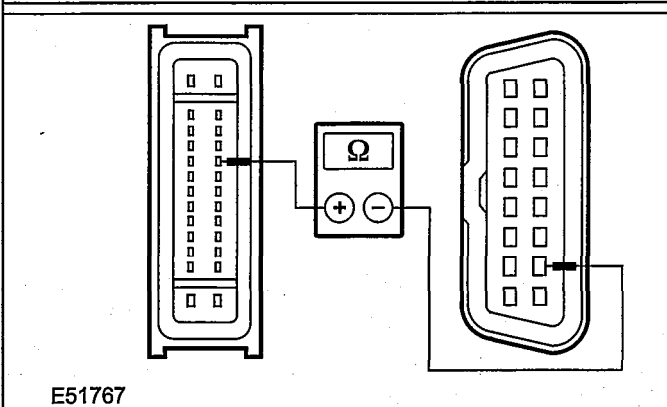
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to E27.

→ **No**

LOCATE and REPAIR the break in the circuit between the ABS module and the DLC using the Wiring Diagrams. CHECK the operation of the system.

E27: CHECK FOR OPEN CIRCUIT BETWEEN THE ABS MODULE AND THE DATA LINK CONNECTOR (DLC)

- 1 Measure the resistance between the ABS module, connector C304, pin 18, circuit 4-EE6 (GY), wiring harness side and DLC, connector C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK the ABS module and if necessary INSTALL a new one. CHECK the operation of the system.

→ **No**

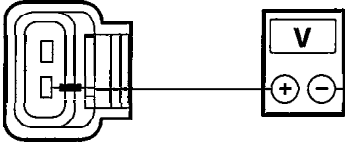
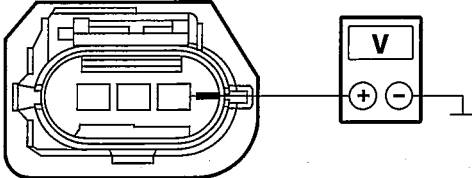
LOCATE and REPAIR the break in the circuit between the ABS module and soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

PINPOINT TEST P : POWER STEERING PUMP MODULE NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER.

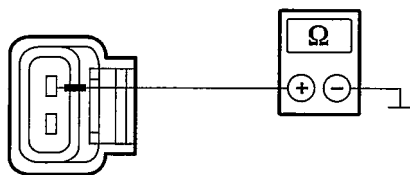
TEST CONDITIONS	DETAILS	RESULTS	ACTIONS
F1: DETERMINE THE FAULT CONDITION			
	1	Ignition switch in position 0.	
	2	Connect the diagnostic tool.	
		<div><input type="checkbox"/> Select the powertrain control module (PCM) with the diagnostic tester.<ul style="list-style-type: none">Is it possible to establish communication with the PCM?<div><div>→ Yes</div><div>GO to F2.</div></div><div><div>→ No</div><div>GO to Pinpoint Test M.</div></div></div>	
F2: TEST FUSE FA			
	1	Ignition switch in position 0.	
		<div><input type="checkbox"/> CHECK Fuse FA (BJB).<ul style="list-style-type: none">Is the fuse OK?<div><div>→ Yes</div><div>GO to F3.</div></div><div><div>→ No</div><div>RENEW fuse FA (80 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</div></div></div>	
	F3: TEST VOLTAGE AT FUSE FA		
	1	Connect Fuse FA (BJB).	
		<div><input type="checkbox"/> Measure the voltage between fuse FA (80A) and ground.<ul style="list-style-type: none">Is battery voltage measured?<div><div>→ Yes</div><div>GO to F4.</div></div><div><div>→ No</div><div>REPAIR the voltage supply to fuse FA using the Wiring Diagrams. CHECK the operation of the system.</div></div></div>	
	F4: CHECK THE VOLTAGE AT THE POWER STEERING PUMP MODULE		
	1	Disconnect Connector C280 from the power steering pump module.	

DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS	RESULTS	ACTIONS
 VFE0037902		2	Measure the voltage between the power steering pump module, connector C280, pin 1, circuit 30-CE7 (RD), wiring harness side and ground.	<ul style="list-style-type: none">Is battery voltage measured? <p>→ Yes GO to F5.</p> <p>→ No LOCATE and REPAIR the break in circuit 30-CE7 (RD), between the power steering pump module and fuse FA using the Wiring Diagrams. CHECK the operation of the system.</p>
F5: CHECK THE VOLTAGE AT THE POWER STEERING PUMP MODULE				
		1	Disconnect Connector C281 from the power steering pump module.	
		2	Ignition switch in position II.	
 VFE0037903		3	Measure the voltage between the power steering pump module, connector C281, pin 1, circuit 15-CE7 (GNIBU), wiring harness side and ground.	<ul style="list-style-type: none">Is battery voltage measured? <p>→ Yes GO to F6.</p> <p>→ No LOCATE and REPAIR the break in circuit 15-CE7 (GN/BU), between the power steering pump module and soldered connection S138 using the Wiring Diagrams. CHECK the operation of the system.</p>
F6: CHECK THE GROUND CONNECTION OF THE POWER STEERING PUMP MODULE				
		1	Ignition switch in position 0.	

DIAGNOSIS AND TESTING

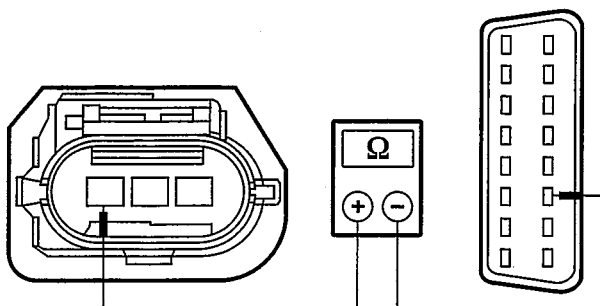
TEST CONDITIONS



VFE0037904

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the power steering pump module, connector C280, pin 2, circuit 31-CE7 (BK), wiring harness side and ground.
- Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to F7.
 - **No**
LOCATE and REPAIR the break in circuit 31-CE7 (BK), between the power steering pump and ground connection G32 using the Wiring Diagrams. CHECK the operation of the system.

F7: CHECK FOR OPEN CIRCUIT BETWEEN THE POWER STEERING PUMP MODULE AND THE DATA LINK CONNECTOR (DLC)

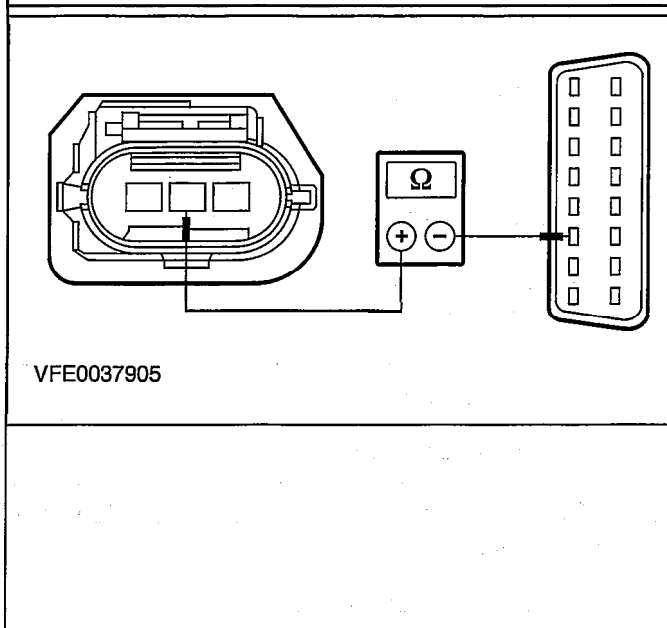
VFE0037906

- 1** Measure the resistance between the power steering pump module, connector C281, pin 3, circuit 4-EC8B (GY/VT), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.
- Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to F8.
 - **No**
LOCATE and REPAIR the break in circuit 4-EC8B (GYM) between the power steering pump module and soldered connection S130 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

F8: CHECK FOR OPEN CIRCUIT BETWEEN THE POWER STEERING PUMP MODULE AND THE DATA LINK CONNECTOR (DLC)

- 1 Measure the resistance between the power steering pump module, connector C281, pin 2, circuit 5-EC8B (BUWH), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.
 - Is a resistance of less than 2 Ohms registered?
 - **Yes**
CHECK and if necessary RENEW the power steering pump module. CHECK the operation of the system.
 - **No**
LOCATE and REPAIR the break in circuit 5-EC8B (BUWH) between the power steering pump module and soldered connection S131 using the Wiring Diagrams. CHECK the operation of the system.

PINPOINT TEST Q : GENERIC ELECTRONIC MODULE (GEM) NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER.

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

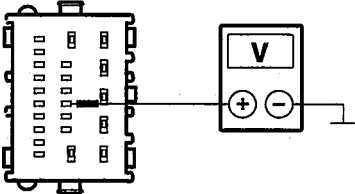
G1: DETERMINE THE FAULT CONDITION

- 1 Ignition switch in position 0.
- 2 Connect the diagnostic tool.
- 3 Select the restraints control module (RCM) with the diagnostic tester.
 - Is it possible to establish communication with the restraints control module (RCM)?
 - **Yes**
GO to G2.
 - **No**
GO to Pinpoint Test N.

G2: CHECK FUSE F38

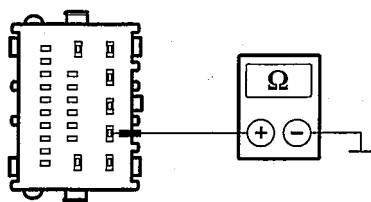
- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>2 CHECK fuse F38 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to G3.</p> <p>→ No RENEW fuse F38 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
G3: CHECK THE VOLTAGE AT FUSE F38	
	<p><input type="checkbox"/> Connect fuse F38 (CJB).</p> <p>2 Ignition switch in position II.</p> <p>3 Measure the voltage between fuse F38 (7.5 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to G4.</p> <p>→ No REPAIR the voltage supply to fuse F38 using the Wiring Diagrams. CHECK the operation of the system.</p>
G4: CHECK THE VOLTAGE AT THE GEM	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C319 (white) from GEM.</p> <p>3 Ignition switch in position II.</p>
 <p>VFE0028972</p>	<p>4 Measure the voltage between the GEM, connector C319 (white), pin 10, circuit 15-DK20 (GNI0G), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to G5.</p> <p>→ No LOCATE and REPAIR the break in circuit 15-DK20 (GNI0G) between the GEM and soldered connection S3 using the Wiring Diagrams. CHECK the operation of the system.</p>
G5: TEST THE GEM GROUND CONNECTION	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C318 (black) from GEM.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

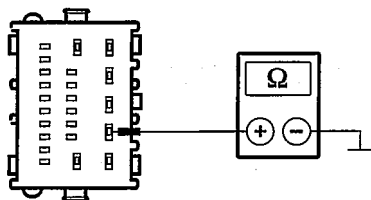


VFE0028971

DETAILS/RESULTS/ACTIONS

- 3** Measure the resistance between the GEM, connector C318 (black), pin 3, circuit 31-DK20 (BK), wiring harness side and ground.
- Is a resistance of less than 2 Ohms registered?
- **Yes**
GO to G6.
- **No**
LOCATE and REPAIR the break in circuit 31-DK20 (BK) between the GEM and soldered connection S15 using the Wiring Diagrams. CHECK the operation of the system.

G6: TEST THE GEM GROUND CONNECTION



VFE0028975

- 1** Disconnect connector C320 (brown) from GEM.
- 2** Measure the resistance between the GEM, connector C320 (brown), pin 2, circuit 91-DK20 (BWRD), wiring harness side and ground.
- Is a resistance of less than 2 Ohms registered?
- **Yes**
GO to G7.
- **No**
LOCATE and RECTIFY the break in the circuit between the GEM and ground connection G14 using the Wiring Diagrams. CHECK the operation of the system.

G7: CHECK FOR OPEN CIRCUIT BETWEEN THE GEM AND THE DLC.

- 1** Measure the resistance between the GEM, connector C320 (brown), pin 23, circuit 4-EC14 (GY/OG), wiring harness side and the DLC, connector C308, pin 3, circuit 4-EC2 (GY/RD), wiring harness side.
- Is a resistance of less than 2 Ohms registered?
- **Yes**
GO to G8.
- **No**
LOCATE and REPAIR the break in the circuit between the GEM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G8: CHECK FOR OPEN CIRCUIT BETWEEN THE GEM AND THE DLC.	
	<input type="checkbox"/> Measure the resistance between the GEM, connector C320 (brown), pin 22, circuit 5-EC14 (BU/BK), wiring harness side and the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes TEST the GEM and RENEW as necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the GEM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST R : POWERTRAIN CONTROL MODULE (PCM) NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H1: DETERMINE THE FAULT CONDITION	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Connect the diagnostic tool. <input type="checkbox"/> Select the electronic instrument cluster with the diagnostic tester. <ul style="list-style-type: none"> • Is it possible to establish communications with the electronic instrument cluster? <p>→ Yes GO to H2.</p> <p>→ No GO to Pinpoint Test M.</p>
H2: CHECK FUSE F16	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 CHECK fuse F16 (CJB). <ul style="list-style-type: none"> • Is the fuse OK? <p>→ Yes GO to H3.</p> <p>→ No RENEW fuse F16 (3 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS		RESULTS	ACTIONS
H3: CHECK THE VOLTAGE AT FUSE F16					
		<div><div>1</div>Connect fuse F16 (CJB).</div>			
		<div><div>2</div>Measure the voltage between fuse F16 (3 A) and ground.<ul style="list-style-type: none">Is battery voltage measured?<div>→ Yes GO to H4.</div><div>→ No REPAIR the voltage supply to fuse F16 using the Wiring Diagrams. CHECK the operation of the system.</div></div>			
H4: CHECK FUSE F12					
		<div><div>1</div>CHECK fuse F12 (CJB).<ul style="list-style-type: none">Is the fuse OK?<div>→ Yes GO to H5.</div><div>→ No RENEW fuse F12 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</div></div>			
H5: CHECK THE VOLTAGE AT FUSE F12					
		<div><div>1</div>Connect fuse F12 (CJB).</div>			
		<div><div></div>Ignition switch in position II.</div>			

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

☐ Measure the voltage between fuse F12 (15 A) and ground.

- Is battery voltage measured?

→ **Yes**

- Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine:

GO to H14.

- Vehicles with 2.0L engine:

GO to H15.

- Vehicles with diesel engine:

GO to H24.

→ **No**

- Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine:

GO to H9.

- Vehicles with 2.0L engine:

GO to H8.

- Vehicles with 1.6L diesel engine:

GO to H7.

- Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR):

GO to H6.

- Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR):

GO to H10.

H6: CHECK THE VOLTAGE AT THE PCM

1 Ignition switch in position 0.

2 Disconnect connector C370 from the PCM.

☐ Ignition switch in position II.

☐ Measure the voltage between the PCM, connector C370, pin C3, circuit 15-RE8 (GNNE), wiring harness side and ground.

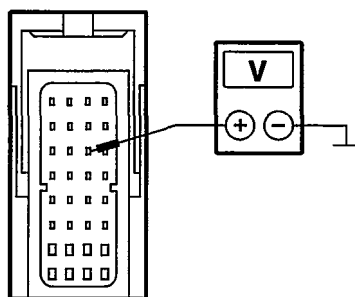
- Is battery voltage measured?

→ **Yes**

GO to H26.

→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.



E57723

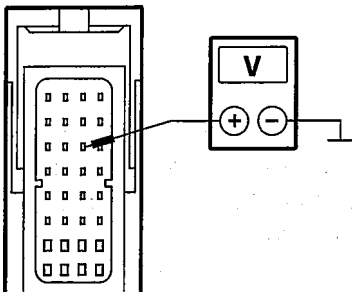
H7: CHECK THE VOLTAGE AT THE PCM

☐ Ignition switch in position 0.

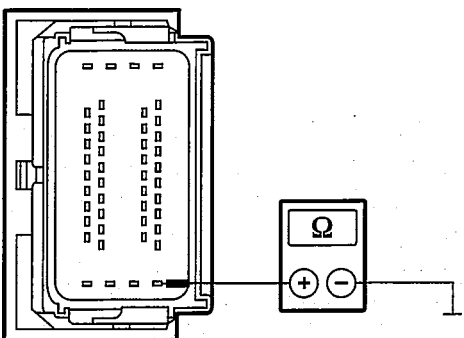
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

 <p>E57723</p>	<p><input type="checkbox"/> 2 Disconnect connector C384 from the PCM.</p> <p><input type="checkbox"/> Ignition switch in position II.</p> <p><input type="checkbox"/> Measure the voltage between the PCM, connector C384, pin C3, circuit 15-RE8C (GNNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to H26.</p> <p>→ No</p> <ul style="list-style-type: none"> LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.
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H8: CHECK THE VOLTAGE AT THE PCM

 <p>E57706</p>	<p><input type="checkbox"/> 1 Ignition switch in position 0.</p> <p><input type="checkbox"/> 2 Disconnect connector C380 from the PCM.</p> <p><input type="checkbox"/> Ignition switch in position II.</p> <p><input type="checkbox"/> 4 Measure the voltage between the PCM, connector C380, pin 46, circuit 15-RE8 (GN/YE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to H26.</p> <p>→ No</p> <ul style="list-style-type: none"> LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.
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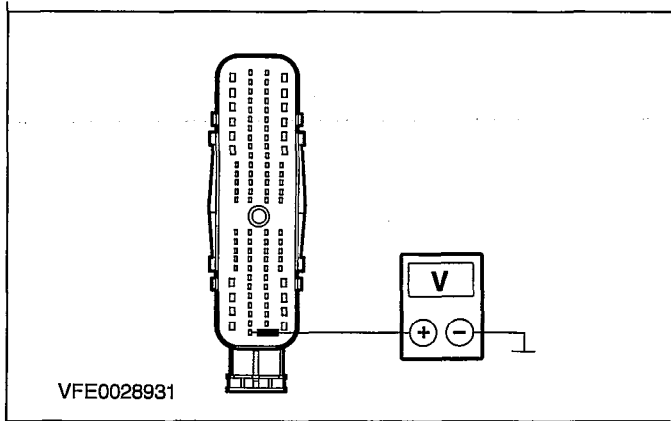
H9: CHECK THE VOLTAGE AT THE PCM

	<p><input type="checkbox"/> 1 Ignition switch in position 0.</p> <p><input type="checkbox"/> 2 Disconnect connector C343 from the PCM.</p> <p><input type="checkbox"/> 3 Ignition switch in position II.</p>
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DIAGNOSIS AND TESTING

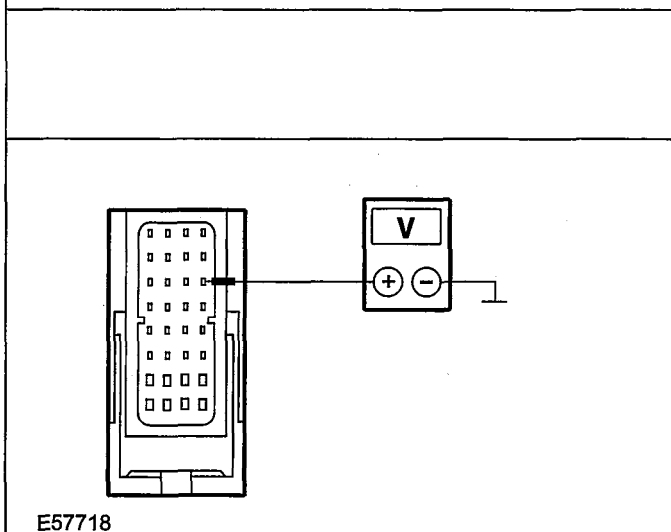
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



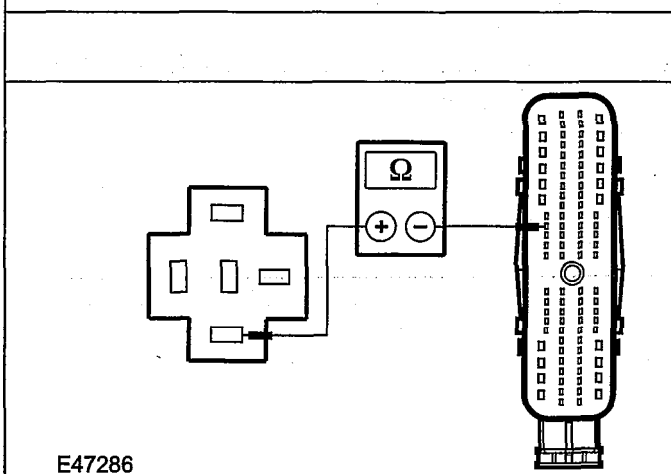
- 4 Measure the voltage between the PCM, connector C343, pin F21, circuit 15-RE8 (GN/YE), wiring harness side and ground.
 - Is battery voltage measured?
 - **Yes**
GO to H26.
 - **No**
LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.

H10: CHECK THE VOLTAGE AT THE PCM



- 1 Disconnect connector C375 from the PCM.
- 2 Ignition switch in position II.
- 3 Measure the voltage between the PCM, connector C375, pin C3, circuit 15-RE8 (GN/YE), wiring harness side and ground.
 - Is battery voltage measured?
 - **Yes**
GO to H26.
 - **No**
LOCATE and REPAIR the break in the circuit between the PCM and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.

H11: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM



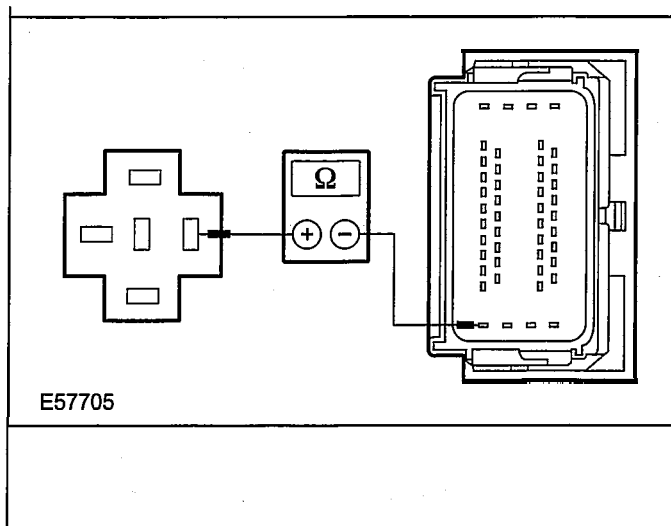
- 1 Disconnect connector C343 from the PCM.
- 2 Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C343, pin M8, circuit 91S-RH9 (BKIBU), wiring harness side.
 - Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to H13.
 - **No**
LOCATE and REPAIR the break in circuit 91S-RH9 (BWBU) between the PCM module relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.

H12: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM

- 1 Disconnect connector C380 from the PCM.

DIAGNOSIS AND TESTING

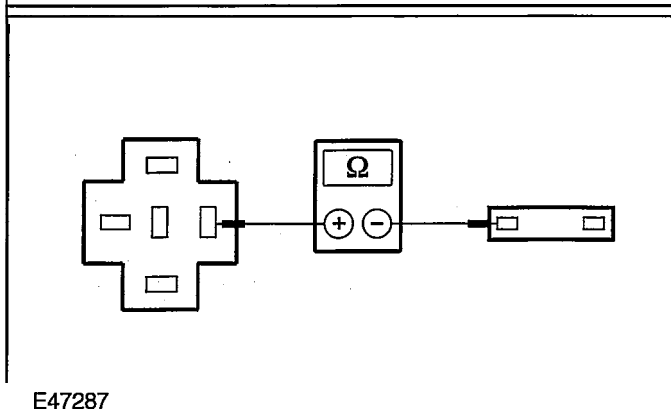
TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

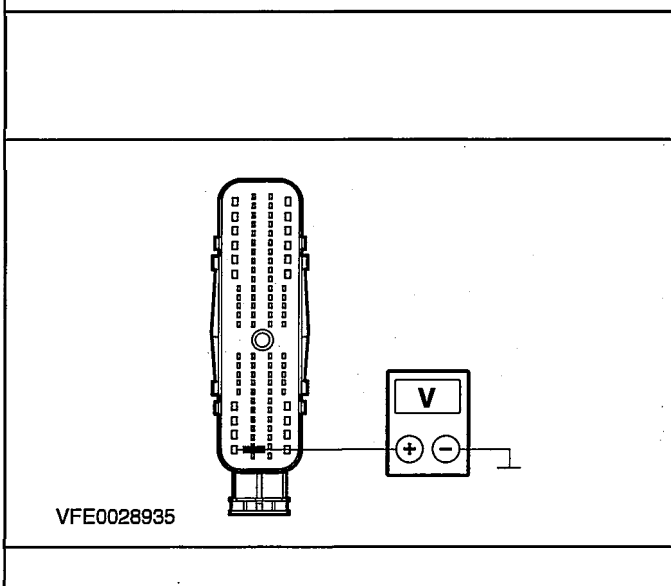
- 2 Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C380, pin 35, circuit 91S-RH9 (BWBU), wiring harness side.
 - Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to H13.
 - **No**
LOCATE and REPAIR the break in the circuit between the PCM module relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.

H13: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND FUSE F12



- 1 Measure the resistance between the PCM module relay, socket C420, Pin 5, circuit 15S-DB9 (GN/RD), wiring harness side and fuse F12 (CJB), wiring harness side.
 - Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to H32.
 - **No**
LOCATE and REPAIR the open circuit between the PCM module relay and fuse F12 using the Wiring Diagrams. CHECK the operation of the system.

H14: CHECK THE VOLTAGE AT THE PCM

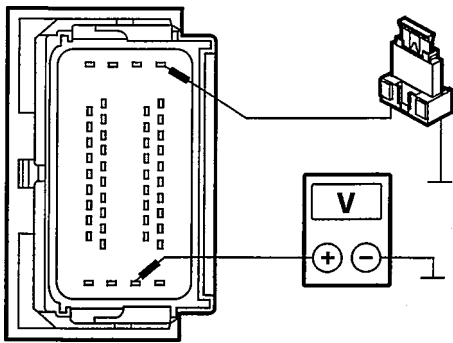
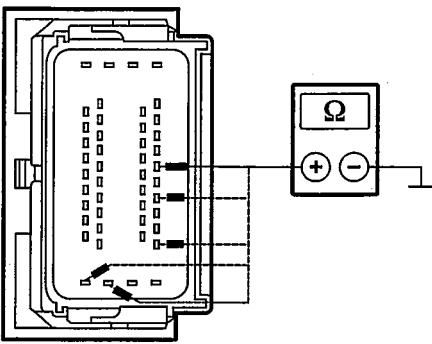


- 1 Ignition switch in position 0.
- 2 Disconnect connector C343 from the PCM.
- 3 Measure the voltage between the PCM, connector C343, pin F9, circuit 29-RE8 (OGNE), wiring harness side and ground.
 - Is battery voltage measured?
 - **Yes**
GO to H20.
 - **No**
LOCATE and REPAIR the break in circuit 29-RE8 (OGNE) between PCM and fuse F16 using the Wiring Diagrams. CHECK the operation of the system.

H15: CHECK THE VOLTAGE AT THE PCM

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

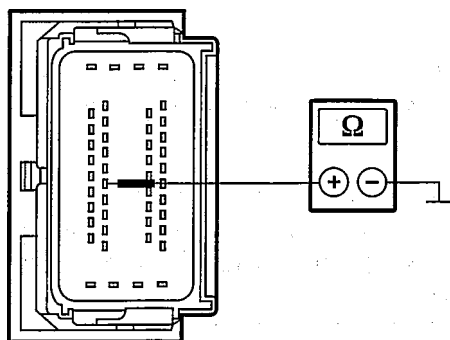
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 <p>E57707</p>	<p><input type="checkbox"/> Use a fused test lead (1 A) at the PCM, connector C380, pin 35, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground.</p> <p>3 Measure the voltage between the PCM, connector C380, pin 34, circuit 15s-RE8 (GN/YE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to H16.</p> <p>→ No LOCATE and REPAIR the open circuit between the PCM and fuse F12 using the Wiring Diagrams. CHECK the operation of the system.</p>
H16: CHECK THE GROUND CONNECTION OF THE PCM	
 <p>E57708</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the PCM, connector C380, pin 11, circuit 91-RE8A (BK/YE), wiring harness side and ground.</p> <p>3 Measure the resistance between the PCM, connector C380, pin 23, circuit 91-RE8B (BK/YE), wiring harness side and ground.</p>
	<p>4 Measure the resistance between the PCM, connector C380, pin 40, circuit 91-RE8C (BK/YE), wiring harness side and ground.</p> <p>5 Measure the resistance between the PCM, connector C380, pin 42, circuit 91-RE8D (BK/YE), wiring harness side and ground.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

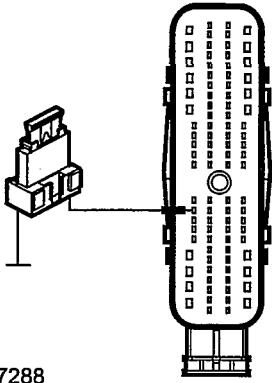
- 6** Measure the resistance between the PCM, connector C380, pin 44, circuit 91-RE8E (BK/YE), wiring harness side and ground.
- Is a resistance of less than 2 Ohms measured in all of the cases?
- **Yes**
GO to H17.
- **No**
- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S301 using the Wiring Diagrams. CHECK the operation of the system.
 - If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the affected circuit between soldered connection S301 and ground connection G1 using the Wiring Diagrams. CHECK the operation of the system.

H17: CHECK THE GROUND CONNECTION OF THE PCM

E57709

- 1** Measure the resistance between the PCM, connector C380, pin 10, circuit 31-RE8 (BK), wiring harness side and ground.
- Is a resistance of less than 2 Ohms registered?
- **Yes**
GO to H18.
- **No**
LOCATE and REPAIR the break in the circuit between the PCM and ground connection G22 using the Wiring Diagrams. CHECK the operation of the system.

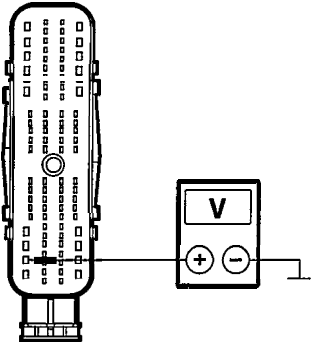
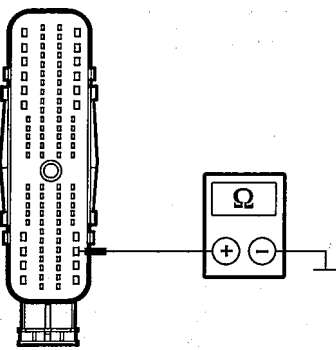
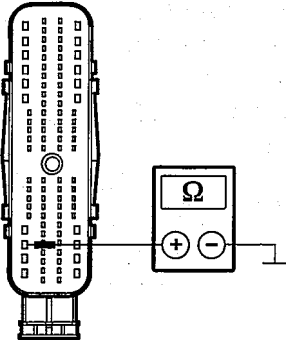
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H18: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
	<p>1 Measure the resistance between the PCM, connector C380, pin 41, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to H19.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
H19: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
	<p>1 Measure the resistance between the PCM, connector C380, pin 30, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
H20: CHECK THE VOLTAGE AT THE PCM	
 <p>E47288</p>	<p>Use a fused test lead (1 A) at the PCM, connector C343, pin M8, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

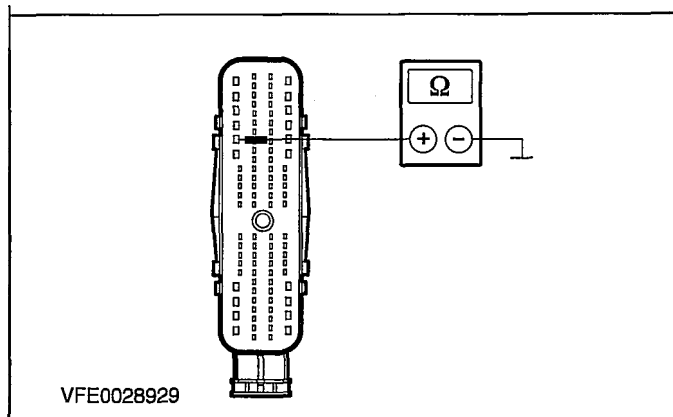
DETAILS/RESULTS/ACTIONS

 <p>VFE0028934</p>	<p>2 Measure the voltage between the PCM, connector C343, pin F8, circuit 15s-RE8 (GNNE), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to H21.</p> <p>→ No LOCATE and REPAIR the open circuit between the PCM and fuse F12 using the Wiring Diagrams. CHECK the operation of the system.</p>
H21: CHECK THE GROUND CONNECTION OF THE PCM	
	<p>1 Ignition switch in position 0.</p>
 <p>VFE0028932</p>	<p>2 Measure the resistance between the PCM, connector C343, pin F40, circuit 91-RE8A (BWE), wiring harness side and ground.</p>
 <p>VFE0028933</p>	<p>3 Measure the resistance between the PCM, connector C343, pin F7, circuit 91-RE8B (BWE), wiring harness side and ground.</p>

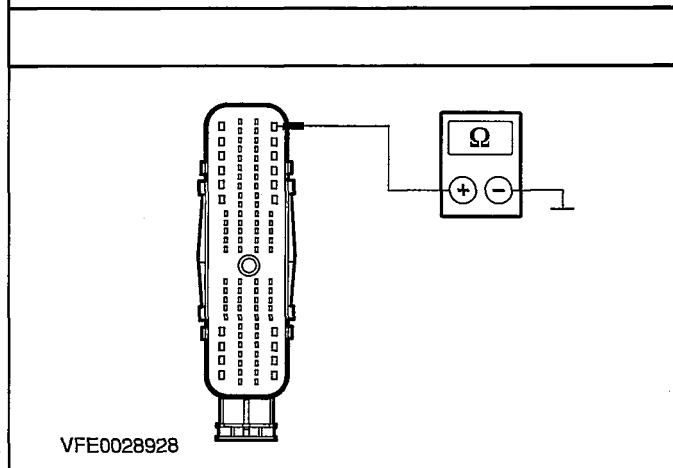
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



Measure the resistance between the PCM, connector C343, pin M5, circuit 91-RE8C (BK/YE), wiring harness side and ground.



5 Measure the resistance between the PCM, connector C343, pin M42, circuit 91-RE8D (BK/YE), wiring harness side and ground.

- Is a resistance of less than 2 Ohms measured in all of the cases?

→ **Yes**

GO to H22.

→ **No**

- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.

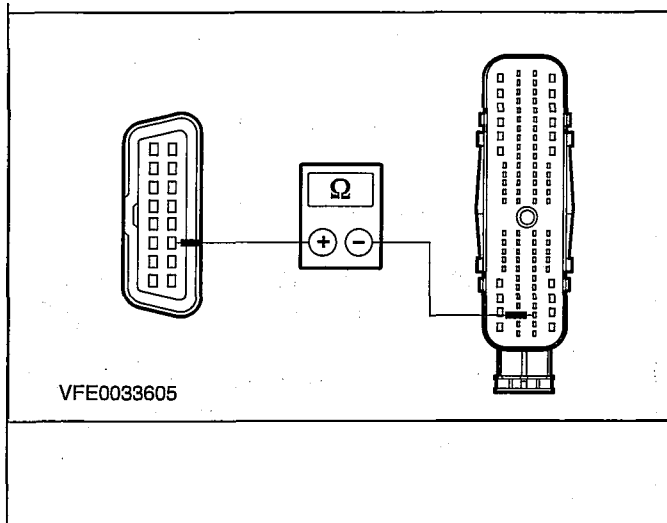
- If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the circuit between soldered connection S109 and ground connection G1 using the Wiring Diagrams. CHECK the operation of the system.

H22: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

1 Disconnect connector C343 from the PCM.

DIAGNOSIS AND TESTING

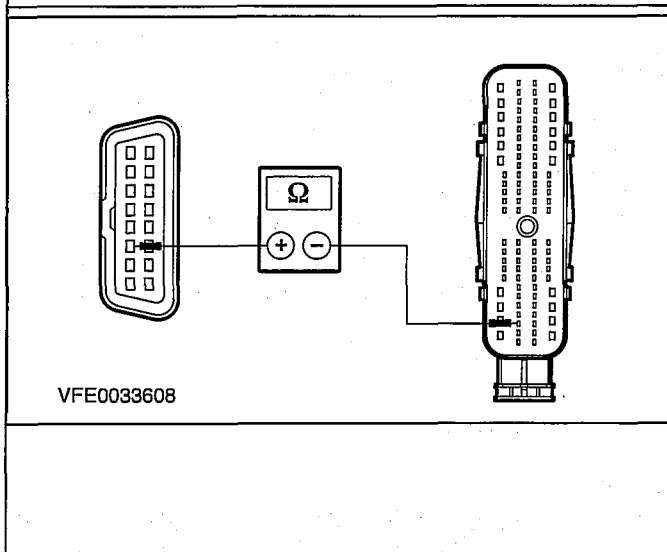
TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the PCM, connector C343, pin F31, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.
 - Is a resistance of less than 2 Ohms registered?
 - **Yes**
GO to H23.
 - **No**
LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

H23: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT



- 1 Measure the resistance between the PCM, connector C343, pin F19, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.
 - Is a resistance of less than 2 Ohms registered?
 - **Yes**
CHECK the PCM and RENEW if necessary. CHECK the operation of the system.
 - **No**
LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

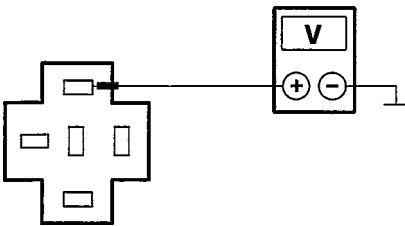
H24: CHECK FUSE F13

- 1 Ignition switch in position 0.
- 2 CHECK fuse F13 (CJB).
 - Is the fuse OK?
 - **Yes**
GO to H25.
 - **No**
RENEW fuse F13 (20 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

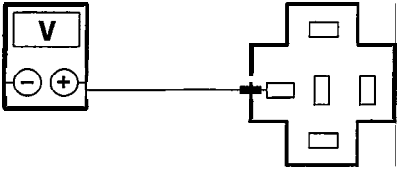
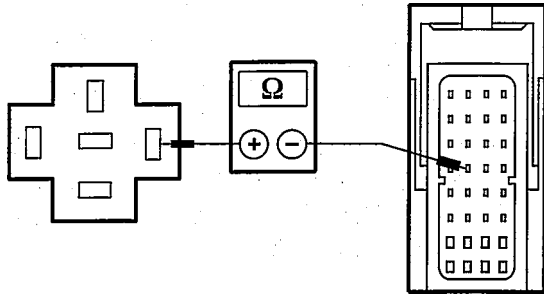
H25: CHECK THE VOLTAGE AT FUSE F13

- 1 Connect fuse F13 (CJB).
- 2 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Measure the voltage between fuse F13 (20 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles with 1.6L diesel engine: GO to H34. Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): GO to H33. Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR): GO to H38. <p>→ No</p> <p>GO to H26.</p>
H26: CHECK THE VOLTAGE AT THE PCM MODULE RELAY	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect PCM module relay from socket C420.</p>
 <p>VFE0037106</p>	<p>3 Measure the voltage between the PCM module relay, socket C420, pin 1, circuit 29-RH9 (OGIBU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes</p> <p>GO to H27.</p> <p>→ No</p> <p>LOCATE and REPAIR the break in circuit 29-RH9 (OGIBU) between the PCM module relay and fuse F16 using the Wiring Diagrams. CHECK the operation of the system.</p>

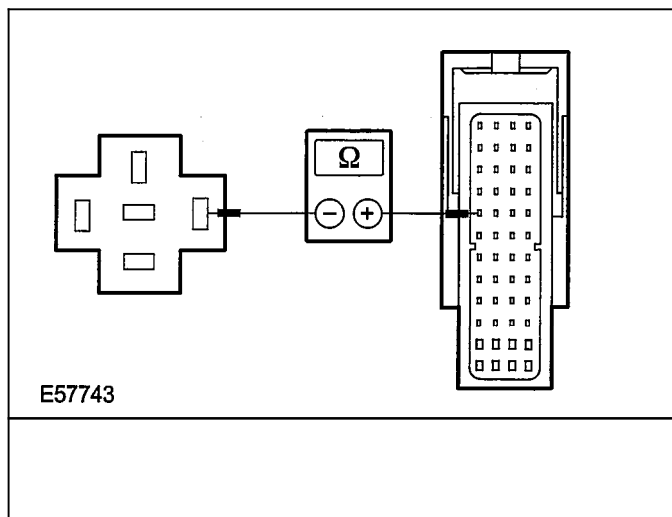
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>H27: CHECK THE VOLTAGE AT THE PCM MODULE RELAY</p>  <p>VFE0037103</p>	<p>1 Measure the voltage between the PCM module relay, socket C420, pin 3, circuit 30-RH10 (RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles with 1.6L diesel engine: GO to H29. Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): GO to H30. Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR): GO to H28. Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine: GO to H11. Vehicles with 2.0L petrol engine: GO to H12. <p>→ No</p> <p>LOCATE and REPAIR the open circuit between the PCM module relay and fuse FB using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>H28: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM</p>  <p>E57710</p>	<p>1 Disconnect connector C377 from the PCM.</p> <p>□ Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C377, pin D2, circuit 91S-RH9 (BWBU), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes</p> <p>GO to H31.</p> <p>→ No</p> <p>LOCATE and REPAIR the break in circuit 91S-RH9 (BWBU) between the PCM module relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>H29: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM</p>	<p>1 Disconnect connector C383 from the PCM.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C383, pin E1, circuit 91S-RH9 (BWBU), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

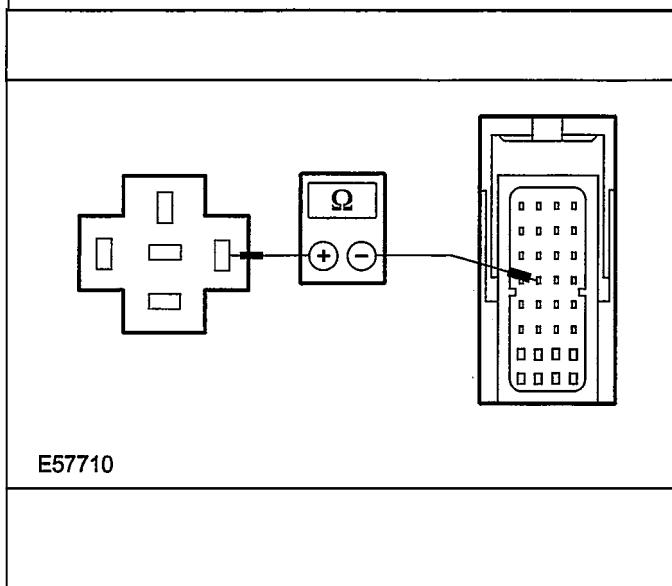
→ **Yes**

GO to H31.

→ **No**

LOCATE and REPAIR the break in circuit 91S-RH9 (BWBU) between the PCM module relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.

H30: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND THE PCM



Disconnect connector C372 from the PCM.

- ☐ Measure the resistance between the PCM module relay, socket C420, pin 2, circuit 91S-RH9 (BWBU), wiring harness side and PCM, connector C372, pin D2, circuit 91S-RH9 (BWBU), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

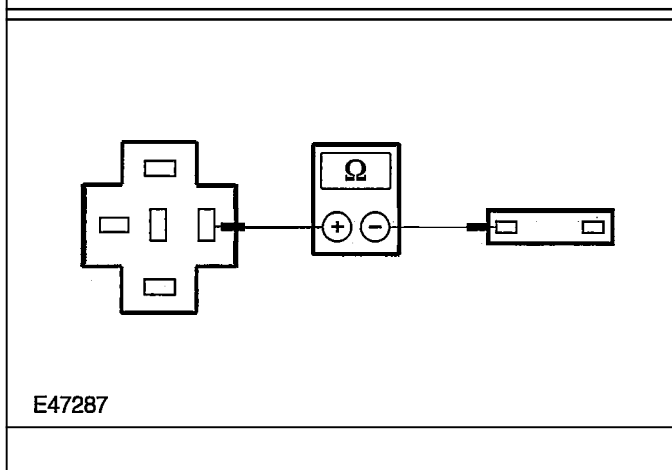
→ **Yes**

GO to H31.

→ **No**

LOCATE and REPAIR the break in circuit 91S-RH9 (BWBU) between the PCM module relay and the PCM using the Wiring Diagrams. CHECK the operation of the system.

H31: CHECK FOR OPEN CIRCUIT BETWEEN THE PCM MODULE RELAY AND FUSE F13



Measure the resistance between the PCM module relay, socket C420, Pin 5, circuit 15S-DB9 (GNIRD), wiring harness side and fuse F13 (CJB), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

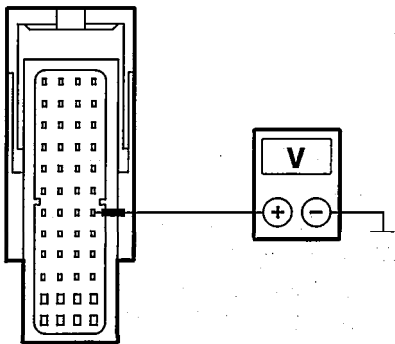
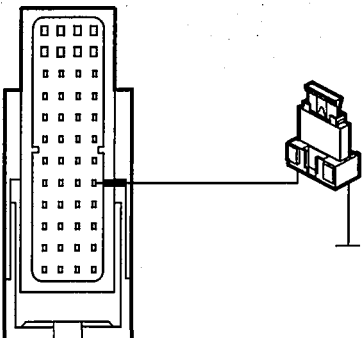
→ **Yes**

GO to H32.

→ **No**

CHECK CJB and RENEW as necessary. CHECK the operation of the system.

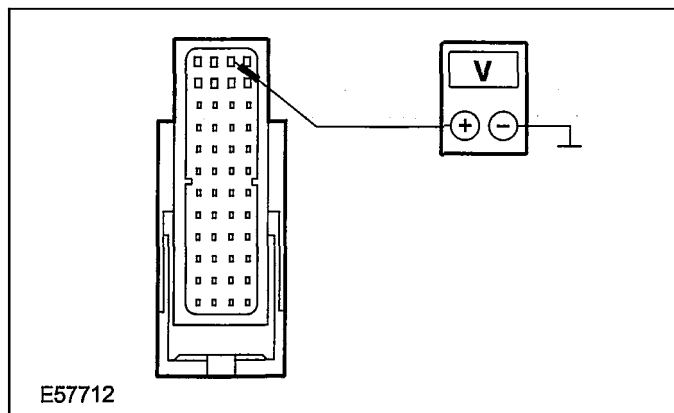
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H32: CHECK THE PCM MODULE RELAY	<ol style="list-style-type: none"> 1 Check the PCM module relay according to the component test at the end of this section. <ul style="list-style-type: none"> • Is the PCM module relay OK? → Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system. → No RENEW the PCM module relay. CHECK the operation of the system.
H33: CHECK THE VOLTAGE AT THE PCM <div>  </div> <div>E57744</div>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect connector C371 from the PCM. 3 Measure the voltage between the PCM, connector C371, pin G4, circuit 29-RE8 (OGNE), wiring harness side and ground. <ul style="list-style-type: none"> • Is battery voltage measured? → Yes GO to H43. → No LOCATE and REPAIR the break in circuit 29-RE8 (OGNE) between PCM and fuse F16 using the Wiring Diagrams. CHECK the operation of the system.
H34: CHECK THE VOLTAGE AT THE PCM <div>  </div> <div>E57711</div>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect connector C383 from the PCM. 3 Use a fused test lead (1 A) at the PCM, connector C383, pin E1, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground.

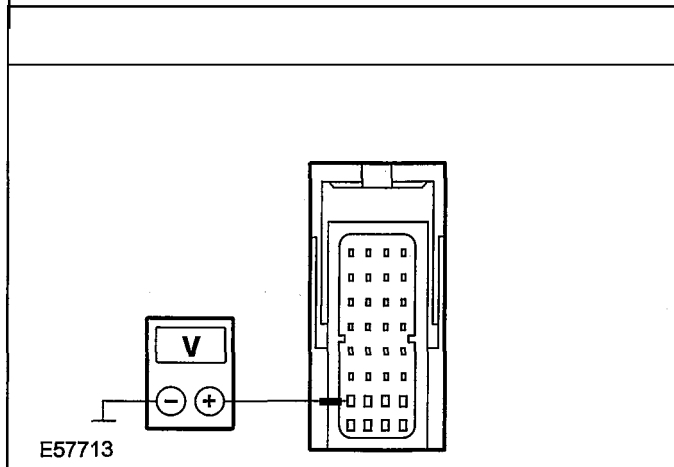
DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

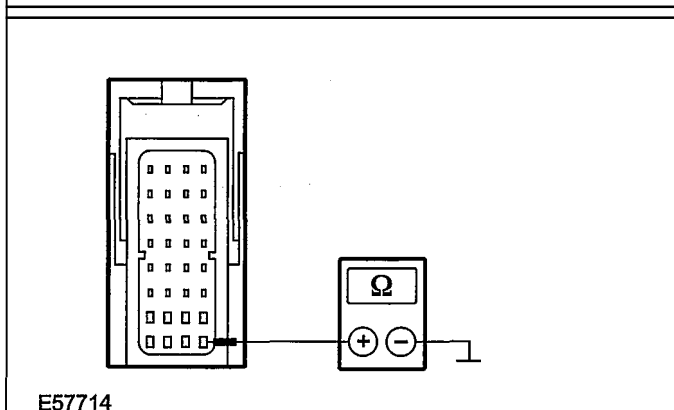


- 4 Measure the voltage between the PCM, connector C383, pin M2, circuit 15S-RE8A (GNNE), wiring harness side and ground.



- 5 Measure the voltage between the PCM, connector C384, pin G1, circuit 15S-RE8B (GN/YE), wiring harness side and ground.
- Is battery voltage measured in both cases?
 - **Yes**
GO to H35.
 - **No**
 - If battery voltage is not measured during one measurement:
LOCATE and RECTIFY the break in the corresponding circuit between the PCM and solder point S111 using the Wiring Diagrams. CHECK the operation of the system.
 - If battery voltage is not measured during both measurements:
LOCATE and REPAIR the break in circuit 15S-RN3 (GN/BU) between soldered connection S111 and fuse F13 using the Wiring Diagrams. CHECK the operation of the system.

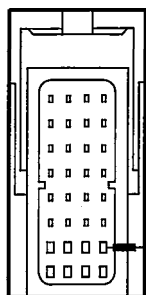
H35: CHECK THE GROUND CONNECTION OF THE PCM



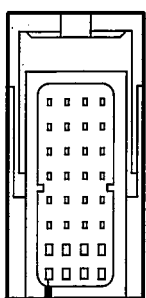
- Measure the resistance between the PCM, connector C384, pin H4, circuit 91-RE8C (BK/YE), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS



E57715



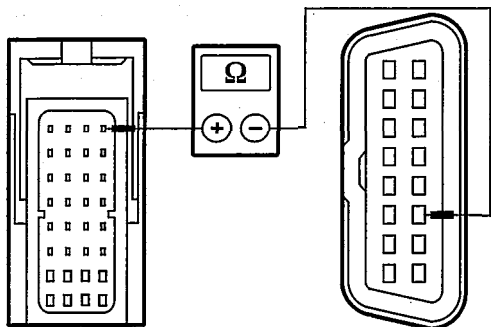
E57716

DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the PCM, connector C384, pin G4, circuit 91-RE8A (BKNE), wiring harness side and ground.

- 3 Measure the resistance between the PCM, connector C384, pin H1, circuit 91-RE8B (BKNE), wiring harness side and ground.
- Is a resistance of less than 2 Ohms measured in all of the cases?
- **Yes**
GO to H36.
- **No**
- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.
 - If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the affected circuit between soldered connection S109 and ground connection G1 using the Wiring Diagrams. CHECK the operation of the system.

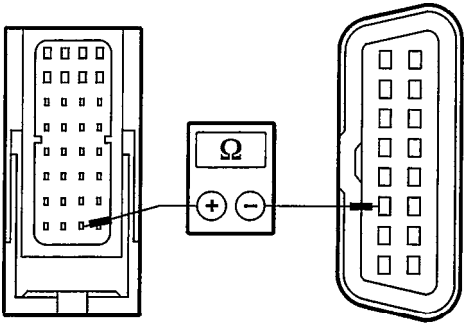
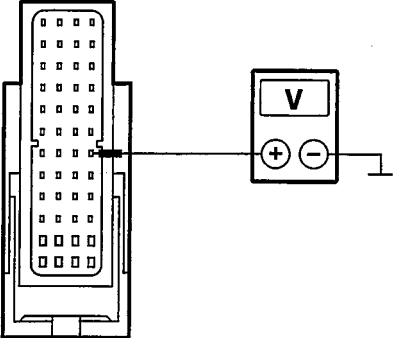
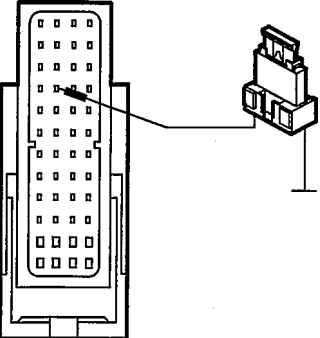
H36: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT



E58252

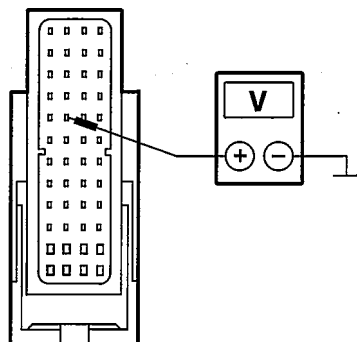
- Measure the resistance between the PCM, connector C384, pin A4, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.
- Is a resistance of less than 2 Ohms registered?
- **Yes**
GO to H37.
- **No**
LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

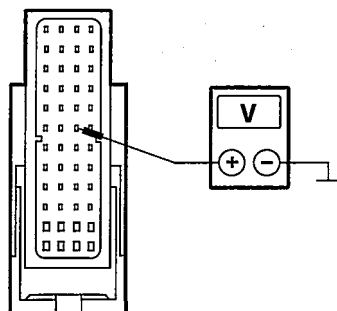
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>H37: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58253</p>	<p><input type="checkbox"/> Measure the resistance between the PCM, connector C384, pin A3, circuit 5-EC7 (BU/RD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>H38: CHECK THE VOLTAGE AT THE PCM</p>  <p>E57717</p>	<ol style="list-style-type: none"> Ignition switch in position 0. Disconnect connector C376 from the PCM. Measure the voltage between the PCM, connector C376, pin G4, circuit 29-RE8 (OGNE), wiring harness side and ground. <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to H39.</p> <p>→ No LOCATE and REPAIR the break in circuit 29-RE8 (OGNE) between PCM and fuse F16 using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>H39: CHECK THE VOLTAGE AT THE PCM</p>  <p>E57719</p>	<ol style="list-style-type: none"> Disconnect connector C377 from the PCM. Use a fused test lead (1 A) at the PCM, connector C377, pin D2, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground

DIAGNOSIS AND TESTING

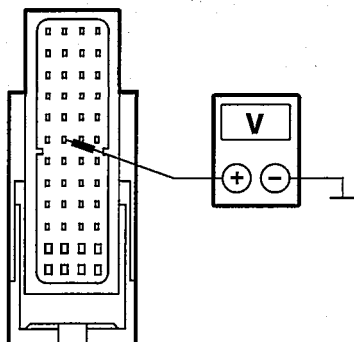
TEST CONDITIONS



E57720



E57722



E57721

DETAILS/RESULTS/ACTIONS

- 3 Measure the voltage between the PCM, connector C377, pin E3, circuit 15S-RE8A (GNNE), wiring harness side and ground.

- 4 Measure the voltage between the PCM, connector C377, pin F3, circuit 15S-RE8B (GNNE), wiring harness side and ground.

- 5 Measure the voltage between the PCM, connector C377, pin F2, circuit 15S-RE8C (GNNE), wiring harness side and ground.

- Is battery voltage measured in all cases?

→ **Yes**

GO to H40.

→ **No**

- If battery voltage is not measured during a measurement:

LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S108 using the Wiring Diagrams. CHECK the operation of the system.

- If battery voltage is not measured during all measurements:

LOCATE and REPAIR the break in circuit 15S-RN3 (GN/BU) between soldered connection S108 and fuse F13 using the Wiring Diagrams. CHECK the operation of the system.

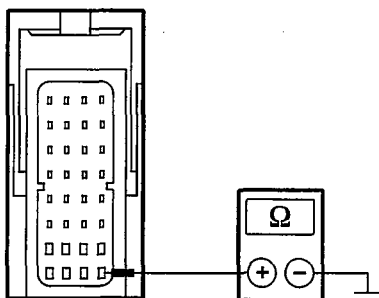
H40: CHECK THE GROUND CONNECTION OF THE PCM

- 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

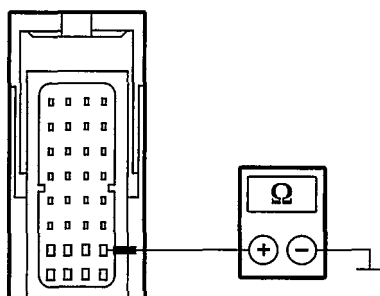
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



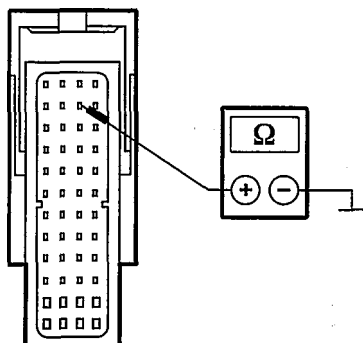
E57714

- ☐ Measure the resistance between the PCM, connector C375, pin H4, circuit 91-RE8A (BK/YE), wiring harness side and ground.



E57724

- 3 Measure the resistance between the PCM, connector C375, pin G4, circuit 91-RE8B (BK/YE), wiring harness side and ground.

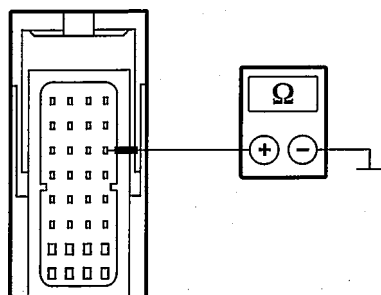


E57745

- 4 Measure the resistance between the PCM, connector C376, pin K2, circuit 91-RE8C (BK/NE), wiring harness side and ground.

DIAGNOSIS AND TESTING

TEST CONDITIONS

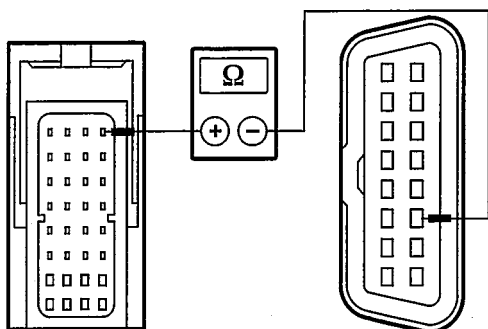


E57746

DETAILS RESULTS ACTIONS

- 5 Measure the resistance between the PCM, connector C377, pin C4, circuit 91-RE8D (BK/YE), wiring harness side and ground.
- Is a resistance of less than 2 Ohms measured in all of the cases?
- **Yes**
GO to H41.
- **No**
- If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.
 - If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the affected circuit between soldered connection S109 and ground connection G1 using the Wiring Diagrams. CHECK the operation of the system.

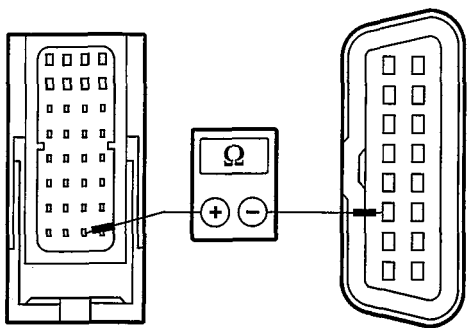
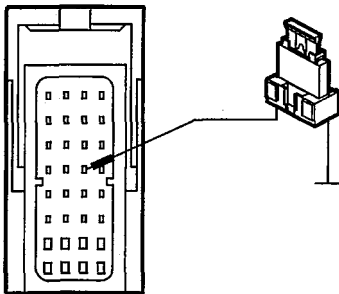
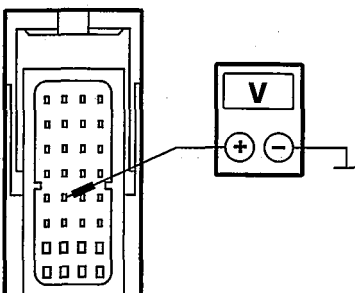
H41: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT



E58252

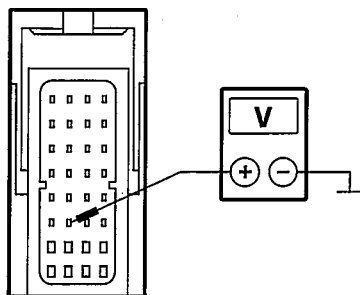
- Measure the resistance between the PCM, connector C375, pin A4, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.
- Is a resistance of less than 2 Ohms registered?
- **Yes**
GO to H42.
- **No**
LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

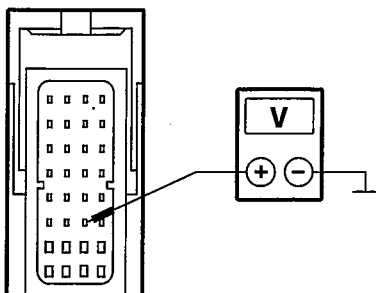
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H42: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
 <p>E58253</p>	<p>1 Measure the resistance between the PCM, connector C375, pin A3, circuit 5-EC7 (BU/RD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
H43: CHECK THE VOLTAGE AT THE PCM	
 <p>E57747</p>	<p>1 Disconnect connector C372 from the PCM.</p> <p><input type="checkbox"/> Use a fused test lead (1 A) at the PCM, connector C372, pin D2, to bridge circuit 91S-RH9 (BWBU), wiring harness side and ground.</p>
 <p>E57748</p>	<p><input type="checkbox"/> Measure the voltage between the PCM, connector C372, pin E3, circuit 15S-RE8A (GN/YE), wiring harness side and ground.</p>

DIAGNOSIS AND TESTING

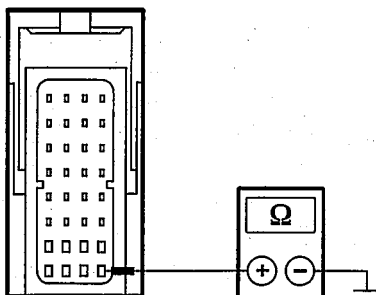
TEST CONDITIONS



E57749



E57750



E57714

DETAILS/RESULTS/ACTIONS

- 4 Measure the voltage between the PCM, connector C372, pin F3, circuit 15S-RE8B (GN/YE), wiring harness side and ground.

- 5 Measure the voltage between the PCM, connector C372, pin F2, circuit 15S-RE8C (GN/YE), wiring harness side and ground.

- Is battery voltage measured in all cases?

→ **Yes**
GO to H44.

→ **No**
- If battery voltage is not measured during a measurement:
LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S108 using the Wiring Diagrams. CHECK the operation of the system.
- If battery voltage is not measured during all measurements:
LOCATE and REPAIR the break in circuit 15S-RN3 (GN/BU) between soldered connection S108 and fuse F13 using the Wiring Diagrams. CHECK the operation of the system.

H44: CHECK THE GROUND CONNECTION OF THE PCM

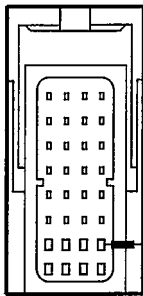
- 1 Ignition switch in position 0.

- 2 Measure the resistance between the PCM, connector C370, pin H4, circuit 91-RE8A (BK/YE), wiring harness side and ground.

DIAGNOSIS AND TESTING

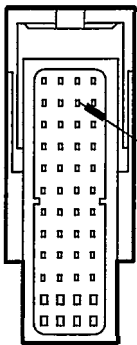
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



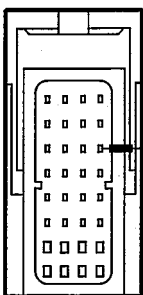
E57724

- 3 Measure the resistance between the PCM, connector C370, pin G4, circuit 91-RE8B (BK/YE), wiring harness side and ground.



E57745

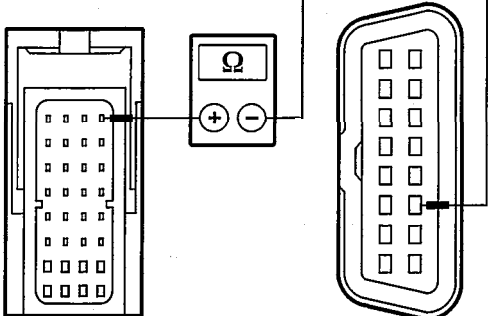
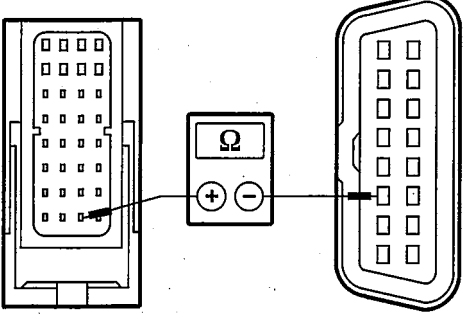
- 4 Measure the resistance between the PCM, connector C371, pin K2, circuit 91-RE8C (BK/NE), wiring harness side and ground.



E57746

- 5 Measure the resistance between the PCM, connector C372, pin C4, circuit 91-RE8D (BK/NE), wiring harness side and ground.
- Is a resistance of less than 2 Ohms measured in all of the cases?
 - **Yes**
GO to H45.
 - **No**
 - If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the PCM and soldered connection S109 using the Wiring Diagrams. CHECK the operation of the system.
 - If a resistance of more than 2 Ohms is measured in all of the measurements: LOCATE and REPAIR the break in the affected circuit between soldered connection S109 and ground connection G1 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>H45: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58252</p>	<p>1 Measure the resistance between the PCM, connector C370, pin A4, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to H46.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>H46: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58253</p>	<p>1 Measure the resistance between the PCM, connector C370, pin A3, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST S : ELECTRONIC INSTRUMENT CLUSTER NOT COMMUNICATING WITH THE DIAGNOSTIC TESTER.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
I1: DETERMINE THE FAULT CONDITION	
	1 Ignition switch in position 0.
	2 Connect the diagnostic tool.

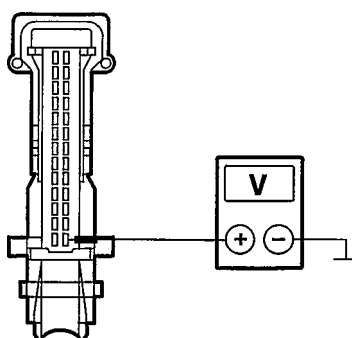
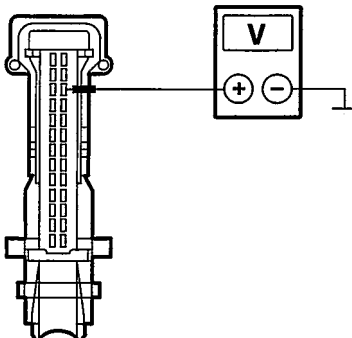
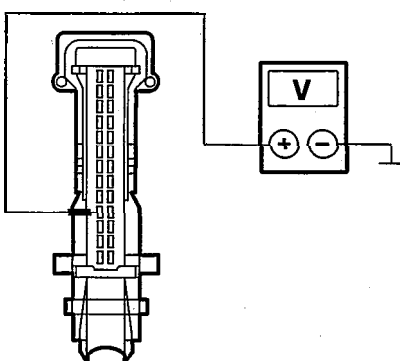
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<input type="checkbox"/> Select the powertrain control module (PCM) with the diagnostic tester. <ul style="list-style-type: none"> Is it possible to establish communication with the PCM? → Yes GO to 12 → No GO to Pinpoint Test M.
12: CHECK FUSE F20	
	<ol style="list-style-type: none"> Ignition switch in position 0. <input type="checkbox"/> CHECK fuse F20 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to 13 → No RENEW fuse F20 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
13: CHECK THE VOLTAGE AT FUSE F20	
	<ol style="list-style-type: none"> Connect fuse F20 (CJB). <input type="checkbox"/> Measure the voltage between fuse F20 (7.5 A) and ground. <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to 14. → No REPAIR the voltage supply to fuse F20 using the Wiring Diagrams. CHECK the operation of the system.
14: CHECK FUSE F44	
	<ol style="list-style-type: none"> CHECK fuse F44 (CJB). <ul style="list-style-type: none"> Is the fuse OK? → Yes GO to 15. → No RENEW fuse F44 (3 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

DIAGNOSIS AND TESTING

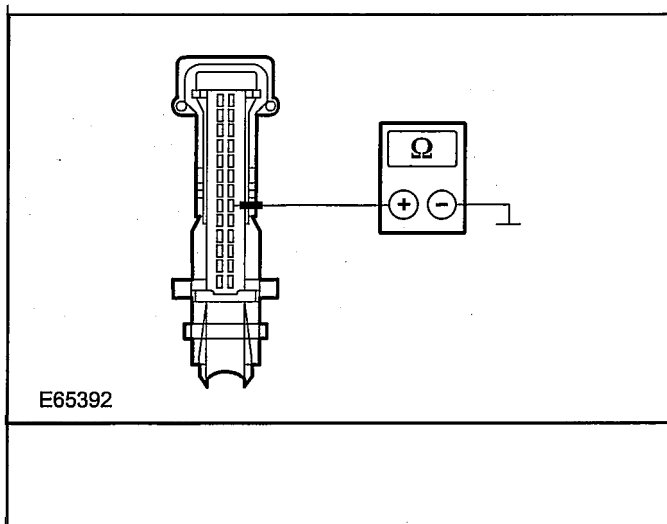
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
15: CHECK THE VOLTAGE AT FUSE F44	
	<input type="checkbox"/> 1 Connect fuse F44 (CJB).
	<input type="checkbox"/> Ignition switch in position I.
	<input type="checkbox"/> Measure the voltage between fuse F44 (3 A) and ground.
	<ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to 16.</p> <p>→ No REPAIR the voltage supply to fuse F44 using the Wiring Diagrams. CHECK the operation of the system.</p>
16: CHECK FUSE F38	
	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> 2 CHECK fuse F38 (CJB).
	<ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to 17.</p> <p>→ No RENEW fuse F38 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
17: CHECK THE VOLTAGE AT FUSE F38	
	<input type="checkbox"/> 1 Connect fuse F38 (CJB).
	<input type="checkbox"/> 2 Ignition switch in position II.
	<input type="checkbox"/> Measure the voltage between fuse F38 (7.5 A) and ground.
	<ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to 18.</p> <p>→ No REPAIR the voltage supply to fuse F38 using the Wiring Diagrams. CHECK the operation of the system.</p>
18: CHECK THE VOLTAGE AT THE ELECTRONIC INSTRUMENT CLUSTER	
	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> 2 Disconnect Electronic instrument cluster connector C339.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSRESULTSIACTIONS
 <p>E65379</p>	<p>3 Measure the voltage between the instrument cluster, connector C339, pin 14, circuit 29-GG11 (OGIBU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to 19. → No LOCATE and REPAIR the break in circuit 29-GG11 (OGIBU) between the electronic instrument cluster and fuse F20 using the Wiring Diagrams. CHECK the operation of the system.
19: CHECK THE VOLTAGE AT THE ELECTRONIC INSTRUMENT CLUSTER	
 <p>E65374</p>	<p>1 Ignition switch in position I.</p> <p><input type="checkbox"/> Measure the voltage between the electronic instrument cluster, connector C339, pin 24, circuit 75-GG11 (YE/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to 110. → No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and fuse F44 using the Wiring Diagrams. CHECK the operation of the system.
110: CHECK THE VOLTAGE AT THE ELECTRONIC INSTRUMENT CLUSTER	
 <p>E65375</p>	<p><input type="checkbox"/> Ignition switch in position II.</p> <p>2 Measure the voltage between the electronic instrument cluster, connector C339, pin 4, circuit 15-GG11 (GN/BU), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? → Yes GO to 111. → No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and fuse F38 using the Wiring Diagrams. CHECK the operation of the system.
III: CHECK THE GROUND CONNECTION OF THE ELECTRONIC INSTRUMENT CLUSTER	
	<p>1 Ignition switch in position 0.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

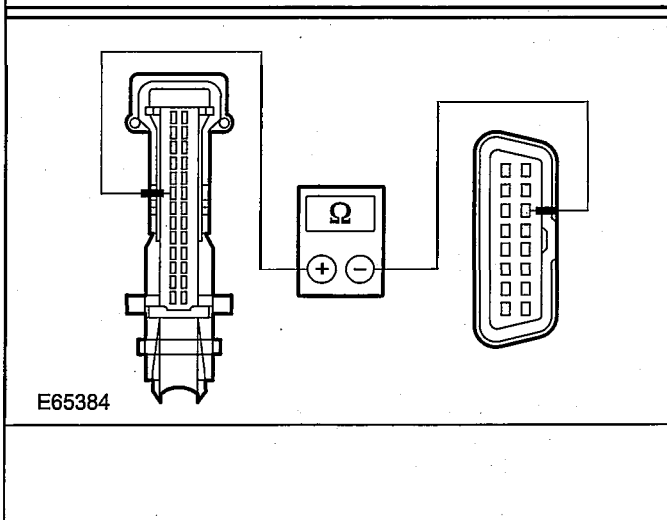
- 2 Measure the resistance between the electronic instrument cluster, connector C339, pin 19, circuit 91-GG11 (BWBU), wiring harness side and ground.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**
GO to 112.

→ **No**
LOCATE and RECTIFY the open circuit between the electronic instrument cluster and ground connection G14 using the Wiring Diagrams. CHECK the operation of the system.

112: CHECK THE CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC FOR OPEN CIRCUIT (HS CAN BUS)



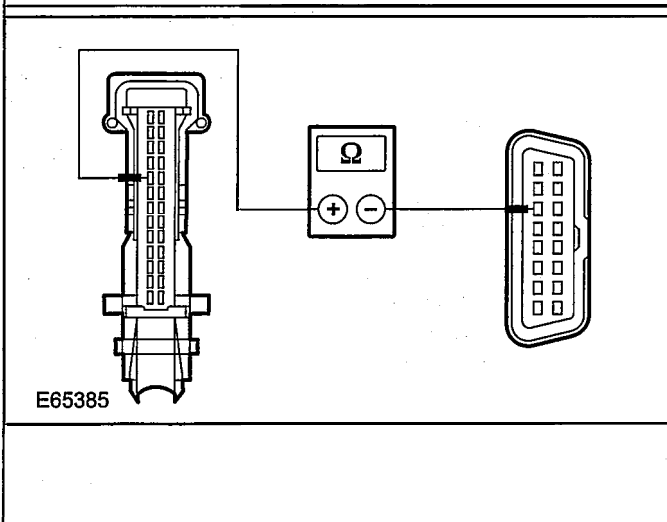
- Measure the resistance between the electronic instrument cluster, connector C339, pin 8, circuit 5-EC8A (BU/WH), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**
GO to 113.

→ **No**
LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.

113: CHECK THE CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC FOR OPEN CIRCUIT (HS CAN BUS)



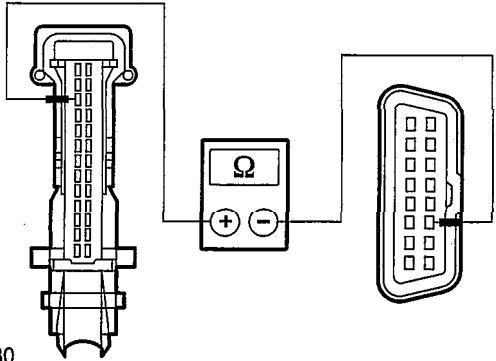
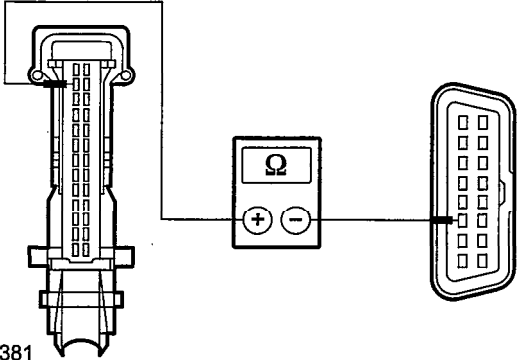
- Measure the resistance between the electronic instrument cluster, connector C339, pin 9, circuit 4-EC8A (GY/VT), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**
GO to 114.

→ **No**
LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
I14: CHECK THE CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC FOR OPEN CIRCUIT (MS CAN BUS)	
 <p>E65380</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the electronic instrument cluster, connector C339, pin 11, circuit 5-EC8D (BU/WH), wiring harness side and the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? → Yes GO to I13. → No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.
I15: CHECK THE CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC FOR OPEN CIRCUIT (MS CAN BUS)	
 <p>E65381</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the electronic instrument cluster, connector C339, pin 12, circuit 4-EC8D (GY/VT), wiring harness side and the DLC, connector C308, pin 3, circuit 4-EC2 (GY/RD), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? → Yes CHECK and if necessary RENEW the electronic instrument cluster. CHECK the operation of the system. → No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.

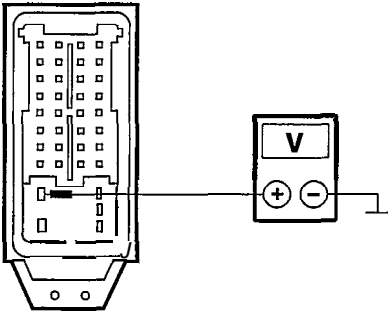
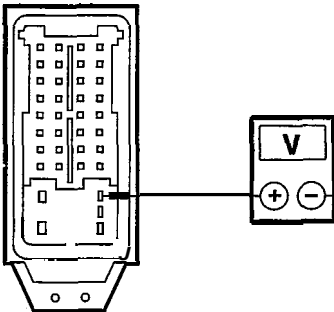
PINPOINT TEST T : TRANSMISSION CONTROL MODULE (TCM) NOT COMMUNICATING WITH DIAGNOSTIC TESTER - VEHICLES WITH AUTOMATIC CLUTCH AND GEARSHIFT ACTUATION

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J1: DETERMINE THE FAULT CONDITION	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Connect the diagnostic tool.

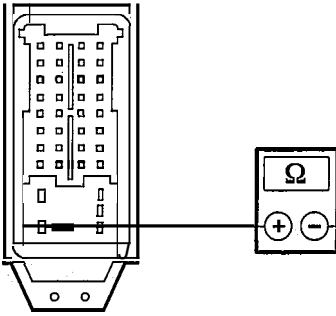
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>3 Select the powertrain control module (PCM) with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the PCM? <p>→ Yes GO to J2.</p> <p>→ No GO to Pinpoint Test M.</p>
J2: CHECK FUSE FB	
	<p>1 Ignition switch in position 0.</p> <p>2 CHECK fuse FB (BJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to J3.</p> <p>→ No RENEW fuse FB (60 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
J3: CHECK THE VOLTAGE AT FUSE FB	
	<p>1 Connect fuse FB (BJB).</p> <p>2 Measure the voltage between fuse FB (60 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to J4.</p> <p>→ No REPAIR the voltage supply to fuse FB using the Wiring Diagrams. CHECK the operation of the system.</p>
54: CHECK FUSE F41	
	<p>1 CHECK fuse F41 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to J5.</p> <p>→ No RENEW fuse F41 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J5: CHECK THE VOLTAGE AT FUSE F41	
	1 Connect fuse F41 (CJB).
	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> Measure the voltage between fuse F41 (7.5 A) and ground.
	<p>Is battery voltage measured?</p> <p>→ Yes GO to J6.</p> <p>→ No REPAIR the voltage supply to fuse F41 using the Wiring Diagrams. CHECK the operation of the system.</p>
J6: CHECK VOLTAGE AT TCM	
 <p>VFE0033754</p>	1 Ignition switch in position 0.
	<input type="checkbox"/> Disconnect connector C676 from TCM.
	<p>Measure the voltage between the TCM, connector C676, pin 49, circuit 30-TA55A (RD), wiring harness side and ground.</p>
	<p>• Is battery voltage measured?</p> <p>→ Yes GO to J7.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the TCM and fuse FB using the Wiring Diagrams. CHECK the operation of the system.</p>
J7: CHECK VOLTAGE AT TCM	
 <p>VFE0033755</p>	<input type="checkbox"/> Ignition switch in position II.
	<input type="checkbox"/> Measure the voltage between the TCM, connector C676, pin 47, circuit 15-TA55 (GNIBK), wiring harness side and ground.
	<p>• Is battery voltage measured?</p> <p>→ Yes GO to J8.</p>
	<p>→ No LOCATE and REPAIR the break in circuit 15-TA55 (GNIBK) between TCM and fuse F41 using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J8: CHECK GROUND CONNECTION OF TCM	
 <p>VFE0033756</p>	<ol style="list-style-type: none"> 1 Ignition switch in position 0.
	<p><input type="checkbox"/> Measure the resistance between the TCM, connector C676, pin 48, circuit 91-TA55 (BWGN), wiring harness side and ground.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the TCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in circuit 91-TA55 (BWGN) between TCM and battery negative using the Wiring Diagrams. CHECK the operation of the system.</p>

PINPOINT TEST U : TRANSMISSION CONTROL MODULE (TCM) NOT COMMUNICATING WITH DIAGNOSTIC TESTER - VEHICLES WITH AUTOMATIC TRANSMISSION.

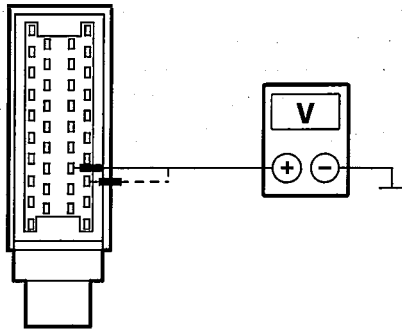
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
K1: DETERMINE THE FAULT CONDITION	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0.
	<ol style="list-style-type: none"> 2 Connect the diagnostic tool.
	<ol style="list-style-type: none"> 3 Select the powertrain control module (PCM) with the diagnostic tester. <ul style="list-style-type: none"> • Is it possible to establish communication with the PCM? <p>→ Yes GO to K2.</p> <p>→ No GO to Pinpoint Test M.</p>
K2: CHECK FUSE F7	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0.
	<ol style="list-style-type: none"> 2 CHECK fuse F7 (CJB). <ul style="list-style-type: none"> • Is the fuse OK? <p>→ Yes GO to K3.</p> <p>→ No RENEW fuse F7 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS		RESULTS	ACTIONS
K3: CHECK THE VOLTAGE AT FUSE F7					
		<div>1</div> Connect fuse F7 (CJB).			
		<div>2</div> Measure the voltage between fuse F7 (15 A) and ground. <div><div>• Is battery voltage measured?</div><div>→ Yes GO to K4.</div><div>→ No REPAIR the voltage supply to fuse F7 using the Wiring Diagrams. CHECK the operation of the system.</div></div>			
K4: CHECK FUSE F40					
		<div>1</div> CHECK fuse F40 (CJB). <div><div>• Is the fuse OK?</div><div>→ Yes GO to K5.</div><div>→ No RENEW fuse F40 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</div></div>			
K5: CHECK THE VOLTAGE AT FUSE F40					
		<div><input type="checkbox"/></div> Connect fuse F40 (CJB).			
		<div>2</div> Ignition switch in position II.			
		<div><input type="checkbox"/></div> Measure the voltage between fuse F40 (7.5 A) and ground. <div><div>• Is battery voltage measured?</div><div>→ Yes GO to K6.</div><div>→ No REPAIR the voltage supply to fuse F40 using the Wiring Diagrams. CHECK the operation of the system.</div></div>			
K6: CHECK VOLTAGE AT TCM					
		<div>1</div> Ignition switch in position 0.			
		<div>2</div> Disconnect connector C428 from automatic transmission module.			

DIAGNOSIS AND TESTING

TEST CONDITIONS



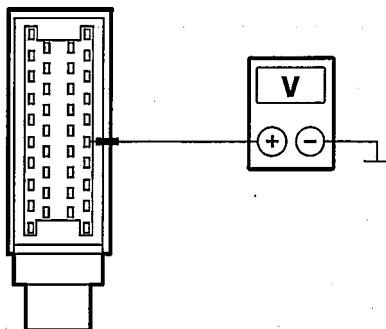
E47283

DETAILS/RESULTS/ACTIONS

- ☐ Measure the voltage between the TCM, connector C428, pin 22, circuit 29-TA55A (OGIBK), wiring harness side and ground.

- 4** Measure the voltage between the TCM, connector C428, pin 31, circuit 29-TA55B (OGIBK), wiring harness side and ground.
- Is battery voltage measured in both cases?
 - **Yes**
GO to K7.
 - **No**
 - If battery voltage is not measured during a measurement:
LOCATE and REPAIR the break in the relevant circuit between the TCM and soldered connection S128 using the Wiring Diagrams. CHECK the operation of the system.
 - If battery voltage is not measured during both measurements:
LOCATE and REPAIR the break in the circuit between soldered connection S128 and fuse F7 using the Wiring Diagrams. CHECK the operation of the system.

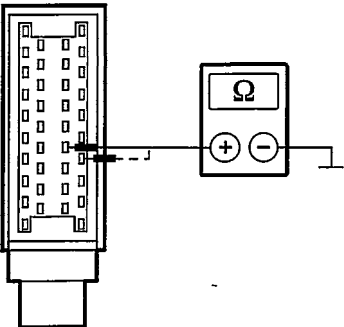
K7: CHECK VOLTAGE AT TCM



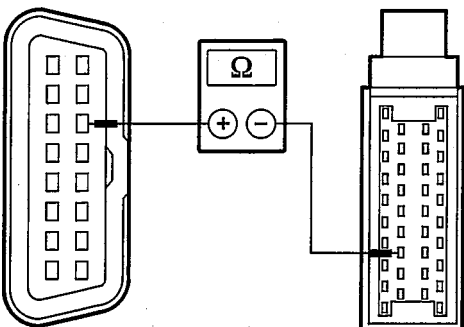
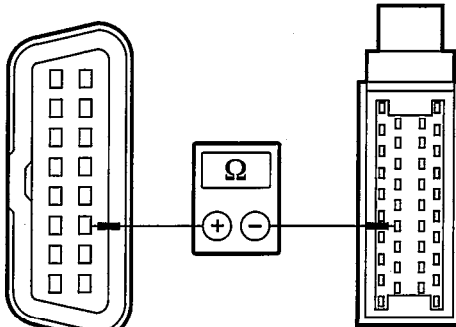
E47284

- 1** Ignition switch in position II.
- 2** Measure the voltage between the TCM, connector C428, pin 33, circuit 15-TA55A (GN/BK), wiring harness side and ground.
- Is battery voltage measured?
 - **Yes**
GO to K8.
 - **No**
LOCATE and REPAIR the break in the circuit between the TCM and fuse F40 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
K8: CHECK GROUND CONNECTION OF TCM	
 <p>E47285</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Measure the resistance between the TCM, connector C428, pin 23, circuit 91-TA55A (BWGN), wiring harness side and ground.</p>
	<p>3 Measure the resistance between the TCM, connector C428, pin 32, circuit 91-TA55B (BWGN), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms measured in both cases? <p>→ Yes GO to K9.</p> <p>→ No</p> <ul style="list-style-type: none"> - If a resistance of more than 2 Ohms is measured in one of the measurements: LOCATE and REPAIR the break in the relevant circuit between the TCM and soldered connection S132 using the Wiring Diagrams. CHECK the operation of the system. - If a resistance of more than 2 Ohms is measured in both of the measurements: LOCATE and REPAIR the break in the relevant circuit between soldered connection S132 and battery negative using the Wiring Diagrams. CHECK the operation of the system.

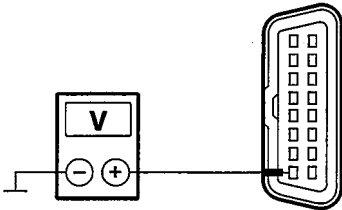
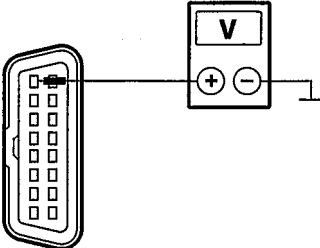
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>K9: CHECK THE CIRCUIT BETWEEN THE TCM AND THE DLC FOR CONTINUITY.</p>  <p>E47293</p>	<p>Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and the TCM, connector C428, pin 26, circuit 5-EC16 (BU/OG), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to K10.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the TCM and soldered connection S131 using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>K10: CHECK THE CIRCUIT BETWEEN THE TCM AND THE DLC FOR CONTINUITY.</p>  <p>E47292</p>	<p>1 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and the TCM, connector C428, pin 25, circuit 4-EC16 (GY/WH), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the TCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the TCM and soldered connection S130 using the Wiring Diagrams. CHECK the operation of the system.</p>

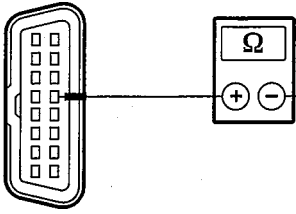
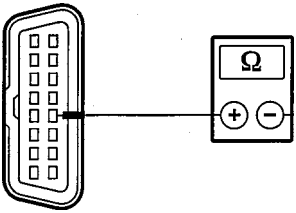
PINPOINT TEST V : FAULTY COMMUNICATION BETWEEN THE MODULES (ISO 9141 BUS).

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L1: CHECK FUSE F18</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 CHECK fuse F18 (CJB).</p> <ul style="list-style-type: none"> • Is the fuse OK? <p>→ Yes GO to L2.</p> <p>→ No RENEW fuse F18 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
L2: CHECK THE VOLTAGE AT FUSE F18	
	<ol style="list-style-type: none"> 1 Connect fuse F18 (CJB). 2 Measure the voltage between fuse F18 (15 A) and ground. <ul style="list-style-type: none"> • Is battery voltage measured? → Yes GO to L3. → No REPAIR the voltage supply to fuse F18 using the Wiring Diagrams. CHECK the operation of the system.
L3: CHECK THE VOLTAGE AT THE DATA LINK CONNECTOR (DLC)	
 <p>VFE0028957</p>	<ol style="list-style-type: none"> 1 Measure the voltage between the DLC, connector C308, pin 16, circuit 29-RA1 (OG), wiring harness side and ground. <ul style="list-style-type: none"> • Is battery voltage measured? → Yes <ul style="list-style-type: none"> - Vehicles with ABS or electronic stability program: GO to L4. - Vehicles without ABS or electronic stability program: GO to L5. → No LOCATE and REPAIR the open circuit between the DLC and fuse F18 using the Wiring Diagrams. CHECK the operation of the system.
L4: CHECK THE VOLTAGE AT THE DLC	
 <p>VFE0028963</p>	<ol style="list-style-type: none"> 1 Ignition switch in position II. 2 Measure the voltage between the DLC, connector C308, pin 9, circuit 15-RA1 (GNIRD), wiring harness side and ground. <ul style="list-style-type: none"> • Is battery voltage measured? → Yes GO to L5. → No LOCATE and REPAIR the break in circuit 15-RA1 (GNIRD) between the DLC and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
L5: CHECK THE GROUND CONNECTION OF THE DLC	
 <p>VFE0028965</p>	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Measure the resistance between the DLC, connector C308, pin 4, circuit 31-RA1 (BK), wiring harness side and ground. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <ul style="list-style-type: none"> → Yes GO to L6. → No LOCATE and REPAIR the open circuit between the DLC and ground connection G25 using the Wiring Diagrams. CHECK the operation of the system.
L6: CHECK THE GROUND CONNECTION OF THE DLC	
 <p>VFE0028964</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the DLC, connector C308, pin 5, circuit 91-RA1 (BWO), wiring harness side and ground. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <ul style="list-style-type: none"> → Yes GO to L7. → No LOCATE and REPAIR the break in circuit 91-RA1 (BWO) between the DLC and ground connection G31 using the Wiring Diagrams. CHECK the operation of the system.
L7: PERFORM NETWORK TEST	
	<ol style="list-style-type: none"> 1 Disconnect - Vehicles with electronic stability program module: Connector 303 from electronic stability program module. 2 Disconnect - Vehicles with anti-lock braking system: connector C304 from ABS module. 3 Connect the diagnostic tool. 4 Select the vehicle with the diagnostic tester. <ul style="list-style-type: none"> • Is it possible to establish a connection between the vehicle and the generic electronic module (GEM)? <ul style="list-style-type: none"> → Yes CHECK and if necessary RENEW the ABS module or electronic stability program module (ESP). CHECK the operation of the system. → No GO to L8.

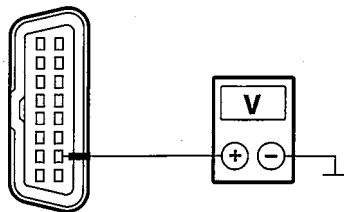
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
L8: PERFORM NETWORK TEST (RESTRAINTS CONTROL MODULE (RCM))	
WARNINGS:	
<p>▲ After disconnecting the battery, wait for at least one minute before working on the supplementary restraint system to prevent the risk of accidental airbag deployment. Failure to follow these instructions may result in personal injury.</p>	
<p>▲ Do not program any keycodes while working on the safety restraint system in order to prevent the risk of accidental deployment of safety restraint system components. Failure to follow these instructions may result in personal injury.</p>	
<p>▲ Always use adapters for terminal probe kit when testing any connectors of the airbag systems or of any other safety restraint systems. Failure to follow these instructions may result in personal injury.</p>	
	<input type="checkbox"/> 1 Disconnect ground cable from battery.
	<input type="checkbox"/> 2 Disconnect connector C500 from restraints control module (RCM).
	<input type="checkbox"/> Connect ground cable from battery.
	<input type="checkbox"/> Select the vehicle with the diagnostic tester. <ul style="list-style-type: none"> Is it possible to establish a connection between the vehicle and the generic electronic module (GEM)? → Yes CHECK and if necessary RENEW the restraints control module (RCM). CHECK the operation of the system. → No GO to L9.
L9: TEST THE ISO 9141 BUS FOR A SHORT TO VOLTAGE SUPPLY	
	<input type="checkbox"/> Ignition switch in position 0.
	<input type="checkbox"/> Disconnect connector C320 (brown) from GEM.
	<input type="checkbox"/> Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



E0029118

- 4 Measure the voltage between the DLC, connector C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side and ground.

- Is a voltage measured?

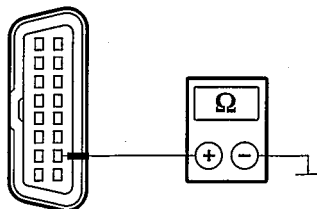
→ **Yes**

LOCATE and REPAIR the short to voltage in the circuits connected to soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to L10.

L10: CHECK THE ISO 9141 BUS FOR A SHORT TO GROUND



E0029119

- 1 Ignition switch in position 0.

- 2 Measure the resistance between the DLC, connector C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side and ground.

- Is a resistance of more than 10,000 ohms measured?

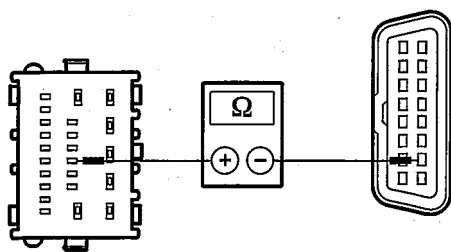
→ **Yes**

GO to L11.

→ **No**

LOCATE and REPAIR the short to ground in the circuits connected to soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

L11: CHECK FOR OPEN CIRCUIT BETWEEN THE GEM AND THE DLC.



VFE0033612

- 1 Measure the resistance between GEM, connector C320 (brown), pin 10, circuit 4-EE11 (GY/WH), wiring harness side and DLC, C308, pin 7, circuit 4-EE10 (GY/BK), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

→ **Yes**

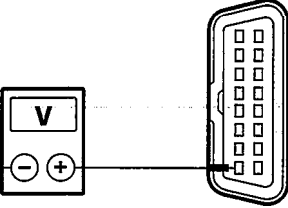
TEST the GEM and RENEW as necessary. CHECK the operation of the system.

→ **No**

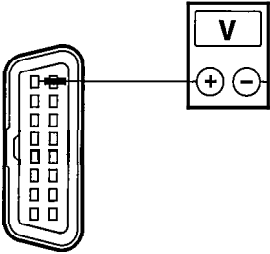
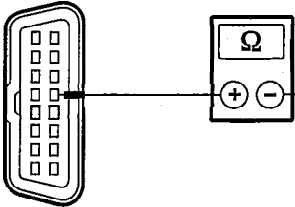
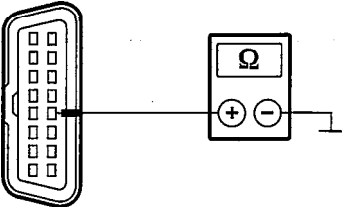
LOCATE and REPAIR the break in circuit 4-EE10 (GY/BK) between the DLC and soldered connection S270 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

PINPOINT TEST W : FAULTY COMMUNICATION BETWEEN THE MODULES - HS CAN BUS.

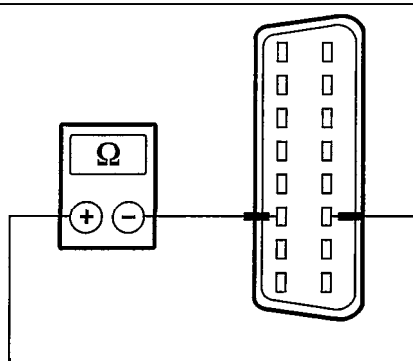
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
NOTE: The number of modules connected to the HS CAN bus depends on the equipment levels of the vehicle. Therefore not every vehicle will have all the modules mentioned below.	
M1: CHECK FUSE F18	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 CHECK fuse F18 (CJB). <ul style="list-style-type: none"> • Is the fuse OK? → Yes GO to M2. → No RENEW fuse F18 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.
M2: CHECK THE VOLTAGE AT FUSE F18	
	<ol style="list-style-type: none"> 1 Connect fuse F18 (CJB). 2 Measure the voltage between fuse F18 (15 A) and ground. <ul style="list-style-type: none"> • Is battery voltage measured? → Yes GO to M3. → No REPAIR the voltage supply to fuse F18 using the Wiring Diagrams. CHECK the operation of the system.
M3: CHECK THE VOLTAGE AT THE DATA LINK CONNECTOR (DLC)	
 <p>VFE0028957</p>	<ol style="list-style-type: none"> 1 Measure the voltage between the DLC, connector C308, pin 16, circuit 29-RA1 (OG), wiring harness side and ground. <ul style="list-style-type: none"> • Is battery voltage measured? → Yes <ul style="list-style-type: none"> - Vehicles with ABS or electronic stability program: GO to M4. - Vehicles without ABS or electronic stability program: GO to M5. → No LOCATE and REPAIR the open circuit between the DLC and fuse F18 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
M4: CHECK THE VOLTAGE AT THE DLC	
 <p>VFE0028963</p>	<p><input type="checkbox"/> Ignition switch in position II.</p> <p>2 Measure the voltage between the DLC, connector C308, pin 9, circuit 15-RA1 (GN/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to M5.</p> <p>→ No LOCATE and REPAIR the break in circuit 15-RA1 (GN/RD) between the DLC and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.</p>
M5: CHECK THE GROUND CONNECTION OF THE DLC	
 <p>VFE0028965</p>	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> Measure the resistance between the DLC, connector C308, pin 4, circuit 31-RA1 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to M6.</p> <p>→ No LOCATE and REPAIR the open circuit between the DLC and ground connection G25 using the Wiring Diagrams. CHECK the operation of the system.</p>
M6: CHECK THE GROUND CONNECTION OF THE DLC	
 <p>VFE0028964</p>	<p>1 Measure the resistance between the DLC, connector C308, pin 5, circuit 91-RA1 (BWO), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to M7.</p> <p>→ No LOCATE and REPAIR the break in circuit 91-RA1 (BWO) between the DLC and ground connection G31 using the Wiring Diagrams. CHECK the operation of the system.</p>
M7: CHECK THE HS CAN BUS FOR SHORT CIRCUIT	
	<p>1 Disconnect the ground cable from the battery.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



E45951

DETAILS/RESULTS/ACTIONS

2 Measure the resistance at the DLC, connector C308, between pin 6, circuit 4-EC1 (GYIRD), wiring harness side and pin 14, circuit 5-EC1 (BU/RD), wiring harness side.

- Is a resistance of between 55 and 65 Ohms measured?

→ **Yes**

- Vehicles without automatic clutch and gear-shift actuation:

GO to M14.

- Vehicles with automatic clutch and gearshift actuation:

GO to M8.

→ **No**

- A resistance of between 115 and 125 Ohms is measured:

GO to M17.

- A resistance of between 115 and 125 Ohms is not measured:

GO to M35.

M8: PERFORM NETWORK TEST

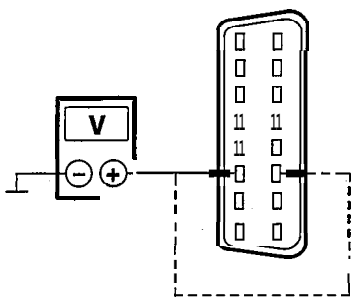
☐ Connect the ground cable to the battery.

2 Connect the diagnostic tool.

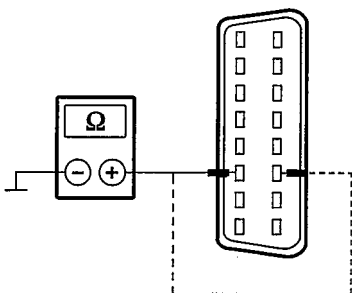
3 Disconnect a listed component, then perform the following test step:

- Vehicles with ESP: Connector 303 from electronic stability program module
- Vehicles with ABS: connector C304 from ABS module
- connector C679 from transmission selector unit
- Connector C281 from the power steering pump module
- Connector C339 from electronic instrument cluster

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>4 Select the vehicle with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the PCM? <p>→ Yes The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> If not all the listed components are disconnected: Key in the OFF position. DISCONNECT the next component (go to test step 3). If all the listed components are disconnected: GO to M9.
M9: CHECK THE HS CAN BUS FOR A SHORT TO VOLTAGE SUPPLY	
	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect connector C676 from transmission control module (TCM).</p> <p>3 Disconnect Vehicles with 1.6L diesel engine: connector C384 from the PCM.</p> <p><input type="checkbox"/> Disconnect Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): connector C370 from the PCM.</p> <p>5 Disconnect Vehicles with 1.4L petrol engine: connector C343 from the PCM.</p> <p>6 Ignition switch in position II.</p>
 <p>VFE0038142</p>	<p>7 Measure the voltage between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.</p>

DIAGNOSIS AND TESTING

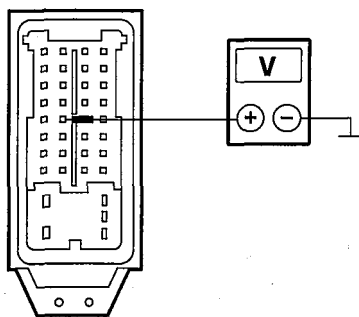
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p><input checked="" type="checkbox"/> Measure the voltage between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a voltage measured? <p>→ Yes LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No GO to M10.</p>
M10: CHECK THE HS CAN BUS FOR A SHORT TO GROUND	
 <p>VFE0038143</p>	<p>Ignition switch in position 0.</p> <p><input type="checkbox"/> Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.</p>
	<p><input type="checkbox"/> Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 Ohm measured in both cases? <p>→ Yes GO to M11.</p> <p>→ No LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

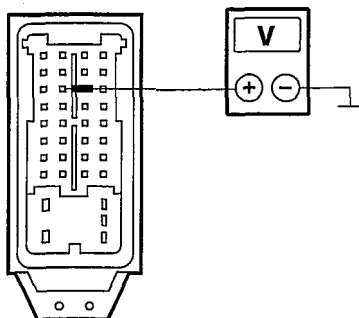
DETAILS/RESULTS/ACTIONS

M11: CHECK THE HS CAN BUS BETWEEN TCM AND PCM FOR SHORT TO VOLTAGE



VFE0033767

- ☐ Measure the voltage between the TCM, connector C676, pin 61, circuit 4-EC7 (GY/IRD) and ground.



VFE0033768

- 2 Measure the voltage between the TCM, connector C676, pin 63, circuit 5-EC7 (BU/RD) and ground.

- Is a voltage measured?

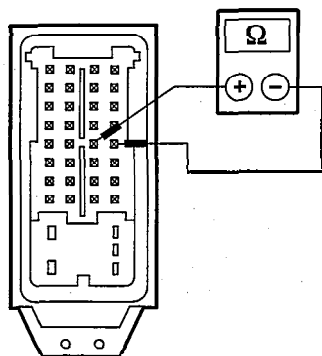
→ **Yes**

LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to M12.

M12: CHECK THE TCM FOR BREAKS



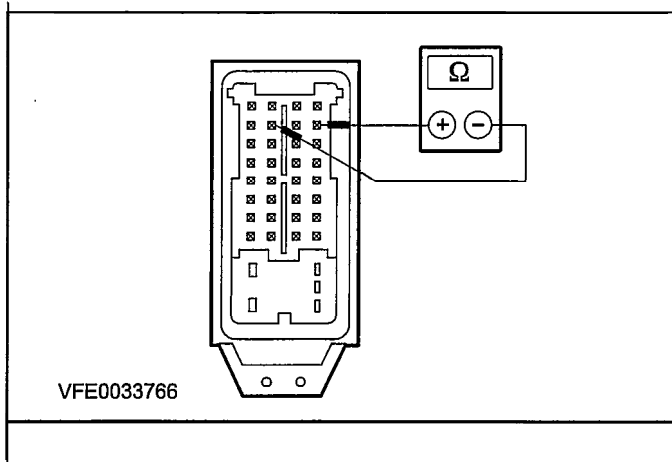
VFE0033765

- ☐ Measure the resistance at TCM, connector C676, between pin 54 and pin 61, component side.

DIAGNOSIS AND TESTING

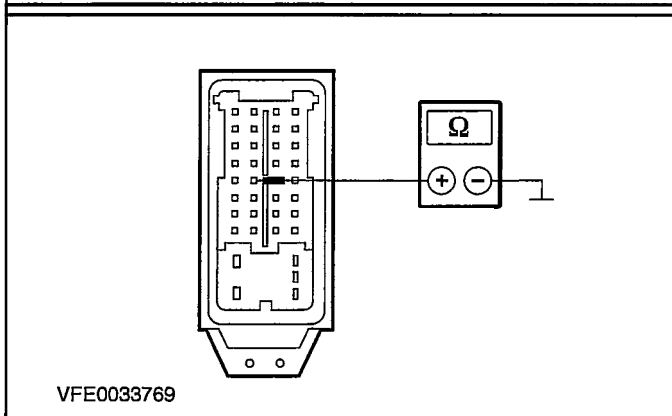
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

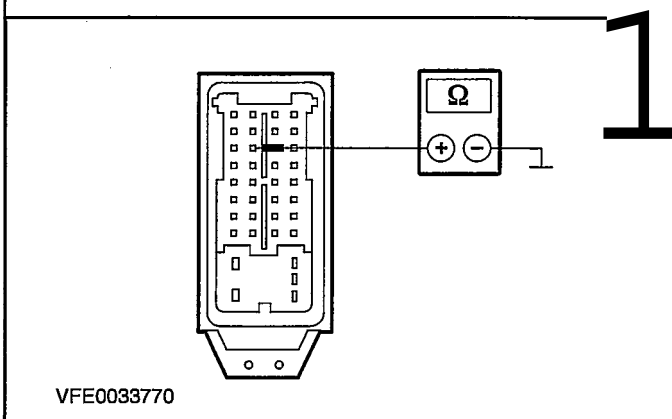


- 2 Measure the resistance at TCM, connector C676, between pin 56 and pin 63, component side.
- Is a resistance of less than 2 Ohms measured in both cases?
- **Yes**
GO to M13.
- **No**
CHECK the TCM and RENEW as necessary.
CHECK the operation of the system.

M13: CHECK THE HS CAN BUS BETWEEN TCM AND PCM FOR SHORT TO GROUND



- 1 Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GY/RD), wiring harness side and ground.



- 2 Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BU/RD), wiring harness side and ground.
- Is a resistance greater than 10,000 Ohm measured in both cases?
- **Yes**
CHECK the TCM and RENEW as necessary.
CHECK the operation of the system. If the system is still inoperative, CHECK the PCM and RENEW if necessary. CHECK the operation of the system.
- **No**
LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

M14: PERFORM NETWORK TEST

- 1 Connect the ground cable to the battery.
- Connect the diagnostic tool.

DIAGNOSIS AND TESTING

TEST CONDITIONS

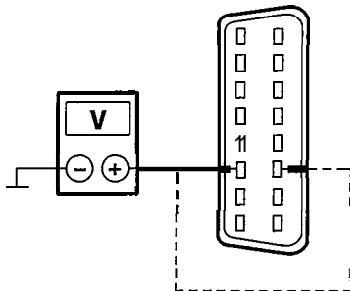
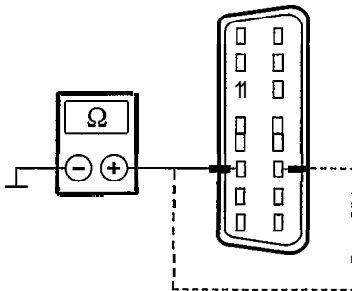
DETAILS/RESULTS/ACTIONS

	<p>3 Disconnect a listed component, then perform the following test step:</p> <ul style="list-style-type: none"> - Vehicles with ESP: Connector 303 from electronic stability program module - Vehicles with ABS: connector C304 from ABS module - Vehicles with automatic transmission: connector C428 from automatic transmission module - Connector C281 from the power steering pump module - Connector C339 from electronic instrument cluster <p>4 Select the vehicle with the diagnostic tester.</p> <ul style="list-style-type: none"> • Is it possible to establish communication with the PCM? <p>→ Yes The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> - If not all the listed components are disconnected: Key in the OFF position. DISCONNECT the next component (go to test step 3). - If all the listed components are disconnected: GO to M15.
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M15: CHECK THE HS CAN BUS FOR A SHORT TO VOLTAGE SUPPLY

	<p>1 Ignition switch in position 0.</p> <p>2 Disconnect Vehicles with 1.6L diesel engine: connector C384 from the PCM.</p> <p>3 Disconnect Vehicles with 2.0L petrol engine: connector C380 from the PCM.</p> <p>4 Disconnect Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR): connector C375 from the PCM.</p> <p><input type="checkbox"/> Disconnect Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): connector C370 from the PCM.</p> <p>6 Disconnect Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine: connector C343 from the PCM.</p> <p>7 Ignition switch in position II.</p>
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DIAGNOSIS AND TESTING

TEST CONDITIONS		DETAILS/RESULTS/ACTIONS	
<div></div> <div>VFE0038142</div>		<div>8</div> Measure the voltage between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.	
		<div>9</div> Measure the voltage between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and ground. <ul style="list-style-type: none">Is a voltage measured?<div>→ Yes LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</div><div>→ No GO to M16.</div>	
M16: CHECK THE HS CAN BUS FOR A SHORT TO GROUND			
<div></div> <div>VFE0038143</div>		<div>1</div> Ignition switch in position 0.	
		<div>2</div> Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.	

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

3 Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and ground.

- Is a resistance greater than 10,000 Ohm measured in both cases?

→ **Yes**

CHECK the PCM and RENEW if necessary.
CHECK the operation of the system.

→ **No**

LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

M17: CHECK THE ELECTRONIC INSTRUMENT CLUSTER

1 Disconnect Connector C339 from electronic instrument cluster.

2 Measure the resistance at the DLC, connector C308, between pin 6, circuit 4-EC1 (GY/RD), wiring harness side and pin 14, circuit 5-EC1 (BU/RD), wiring harness side.

- Is a resistance of between 115 and 125 Ohms measured?

→ **Yes**

GO to M18.

→ **No**

- Vehicles with automatic clutch and gearshift actuation:

GO to M20.

- Vehicles with 1.6L diesel engine without automatic clutch and gearshift actuation:

GO to M29.

- Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR) and without automatic clutch and gearshift actuation:

GO to M27.

- Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR) and without automatic clutch and gearshift actuation:

GO to M33.

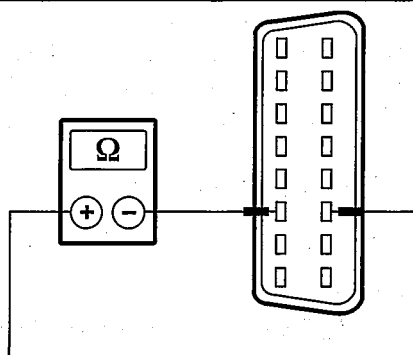
- Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V

(Rocam) engine without automatic clutch and gearshift actuation:

GO to M31.

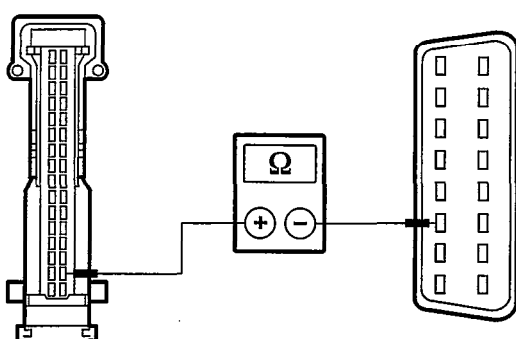
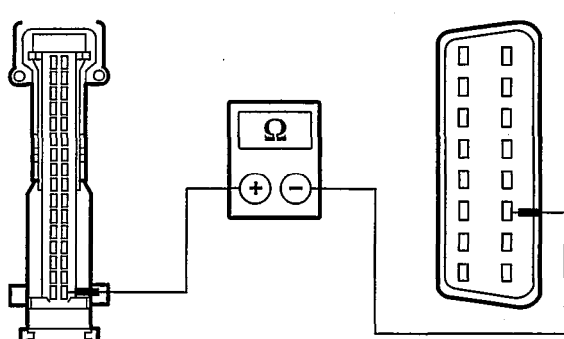
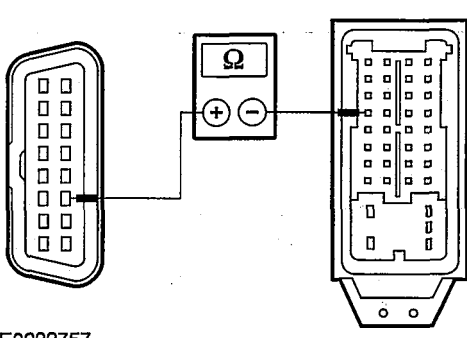
- Vehicles with 2.0L petrol engine:

GO to M25.



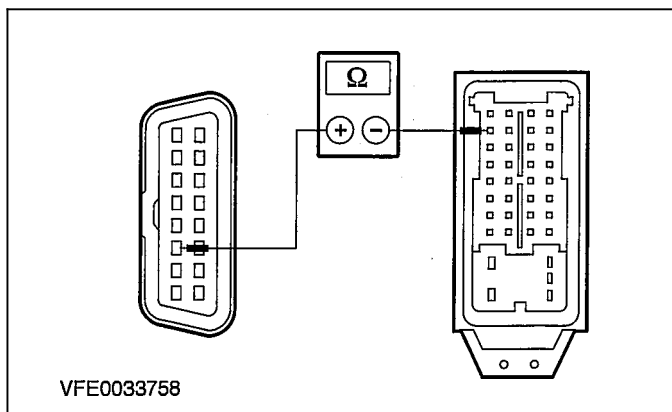
E45951

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>M18: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC</p>  <p>VFE58689</p>	<p>1 Measure the resistance between the electronic instrument cluster, connector C339, pin 31, circuit 5-EC8A (BU/WH), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to M19.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>M19: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC</p>  <p>VFE58690</p>	<p>1 Measure the resistance between the electronic instrument cluster, connector C339, pin 32, circuit 4-EC8A (GY/VT), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK and if necessary RENEW the electronic instrument cluster. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>M20: CHECK THE CIRCUIT BETWEEN THE TCM AND THE DLC FOR CONTINUITY.</p>  <p>VFE0033757</p>	<p>1 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side and the TCM, connector C676, pin 54, circuit 4-EC8 (GY/VT), wiring harness side.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and the TCM, connector C676, pin 56, circuit 5-EC8 (BU/WH), wiring harness side.

- Is a resistance of less than 2 Ohms measured in all of the cases?

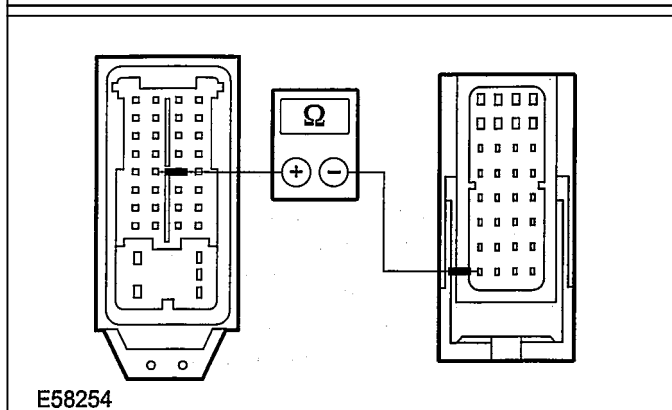
→ **Yes**

- Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): GO to M22.
- Vehicles with 1.4L petrol engine: GO to M23.
- Vehicles with 1.6L diesel engine: GO to M21.

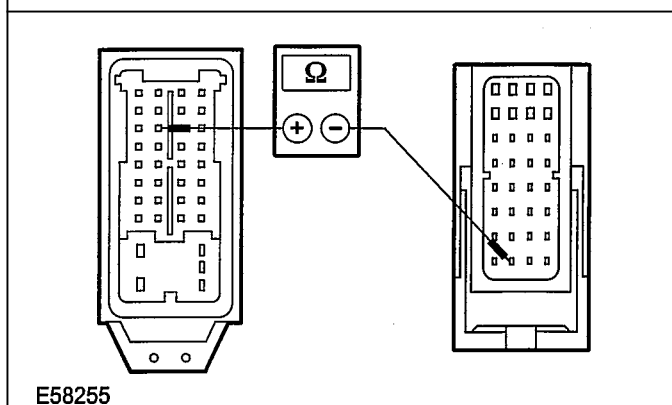
→ **No**

LOCATE and REPAIR the break in the relevant circuit using the Wiring Diagrams. CHECK the operation of the system.

M21: CHECK THE CIRCUIT BETWEEN THE TCM AND THE PCM FOR CONTINUITY.



- 1 Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GYIRD), wiring harness side and the PCM, connector C384, pin A4, circuit 4-EC7 (GYIRD), wiring harness side.



- 2 Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BUIRD), wiring harness side and the PCM, connector C384, pin A3, circuit 5-EC7 (BUIRD), wiring harness side.

- Is a resistance of less than 2 Ohms measured in all of the cases?

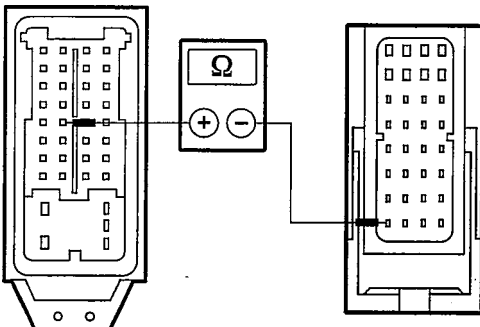
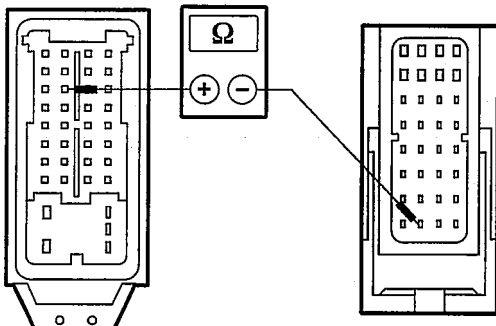
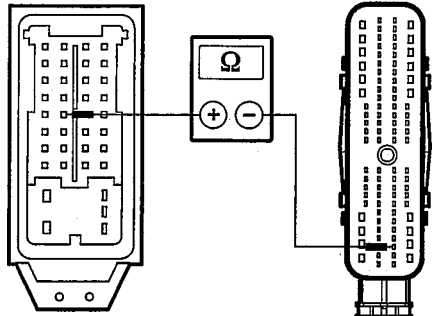
→ **Yes**

GO to M24.

→ **No**

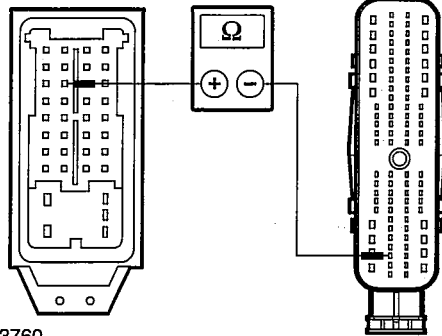
LOCATE and REPAIR the break in the relevant circuit using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>M22: CHECK THE CIRCUIT BETWEEN THE TCM AND THE PCM FOR CONTINUITY.</p>  <p>E58254</p>	<p>Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GYIRD), wiring harness side and the PCM, connector C370, pin A4, circuit 4-EC7 (GYIRD), wiring harness side.</p>
 <p>E58255</p>	<p>2 Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BU/RD), wiring harness side and the PCM, connector C370, pin A3, circuit 5-EC7 (BUIRD), wiring harness side.</p> <p>Is a resistance of less than 2 Ohms measured in all of the cases?</p> <p>→ Yes GO to M24.</p> <p>→ No LOCATE and REPAIR the break in the relevant circuit using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>M23: CHECK THE CIRCUIT BETWEEN THE TCM AND THE PCM FOR CONTINUITY.</p>  <p>VFE0033759</p>	<p><input type="checkbox"/> Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GYIRD), wiring harness side and the PCM, connector C343, pin F31, circuit 4-EC7 (GYIRD), wiring harness side.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0033760

DETAILS RESULTS ACTIONS

- 2 Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BU/RD), wiring harness side and the PCM, connector C343, pin F19, circuit 5-EC7 (BU/RD), wiring harness side.

- Is a resistance of less than 2 Ohms measured in all of the cases?

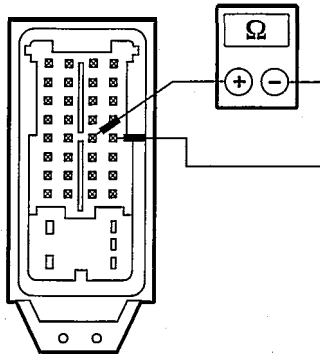
→ **Yes**

GO to M24.

→ **No**

LOCATE and REPAIR the break in the relevant circuit using the Wiring Diagrams. CHECK the operation of the system.

M24: CHECK THE TCM FOR BREAKS



VFE0033765

- 1 Measure the resistance at TCM, connector C676, between pin 54 and pin 61, component side.

- 2 Measure the resistance at TCM, connector C676, between pin 56 and pin 63, component side.

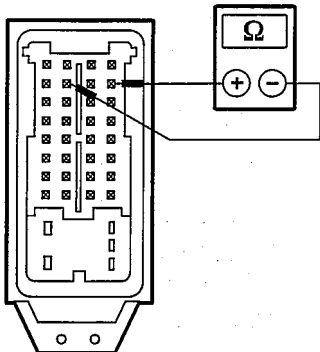
- Is a resistance of less than 2 Ohms measured in both cases?

→ **Yes**

CHECK the PCM and RENEW if necessary. CHECK the operation of the system.

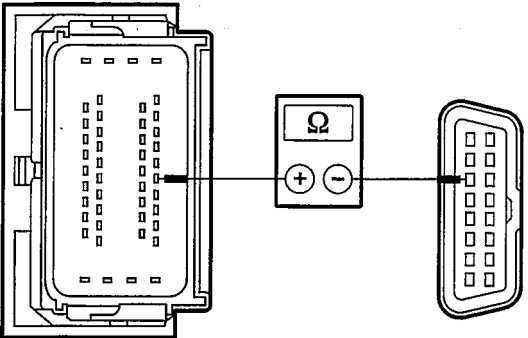
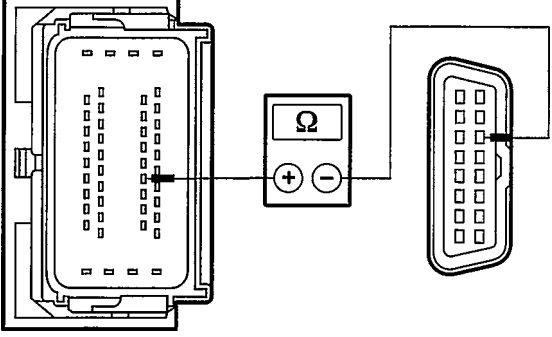
→ **No**

CHECK the TCM and RENEW as necessary. CHECK the operation of the system.



VFE0033766

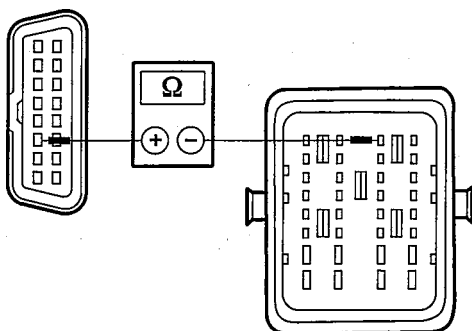
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>M25: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E65382</p>	<p>1 Measure the resistance between the PCM, connector C380, pin 41, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to M26.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>M26: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E65383</p>	<p>1 Measure the resistance between the PCM, connector C380, pin 30, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>M27: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>	<p><input type="checkbox"/> Disconnect connector C370 from the PCM.</p> <p>2 Measure the resistance between the PCM, connector C370, pin A4, circuit 4-EC7 (GYIRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYIRD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to M28.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

M28: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

VFE0033610

- ☐ Measure the resistance between the PCM, connector C370, pin A3, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.

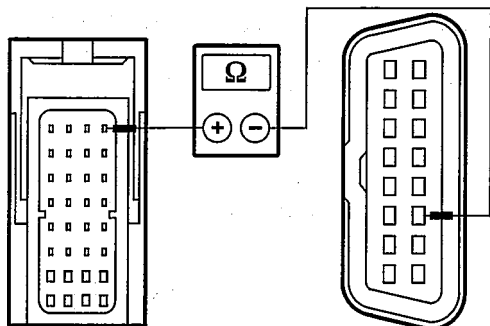
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

CHECK the PCM and RENEW if necessary.
CHECK the operation of the system.

→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

M29: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

E58252

- 1** Measure the resistance between the PCM, connector C384, pin A4, circuit 4-EC7 (GYRD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GYRD), wiring harness side.

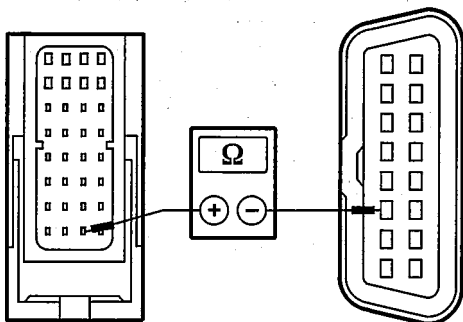
- Is a resistance of less than 2 Ohms registered?

→ **Yes**

GO to M30.

→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

M30: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT

E58253

- 1** Measure the resistance between the PCM, connector C384, pin A3, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.

- Is a resistance of less than 2 Ohms registered?

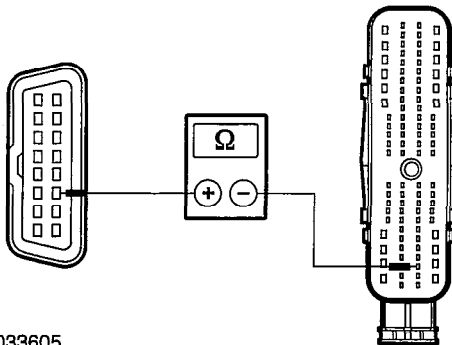
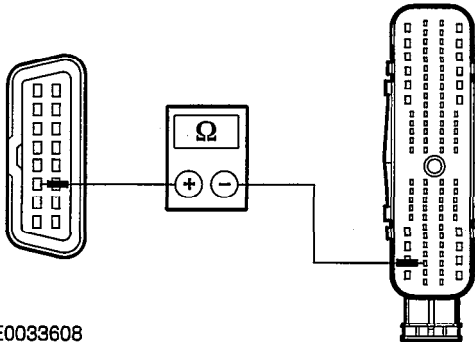
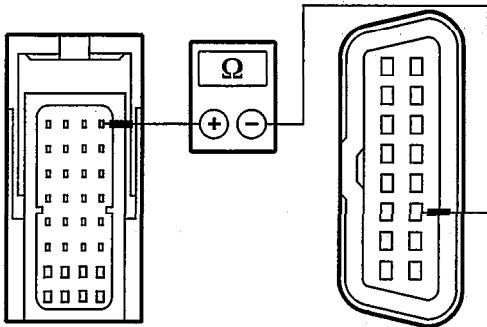
→ **Yes**

CHECK the PCM and RENEW if necessary.
CHECK the operation of the system.

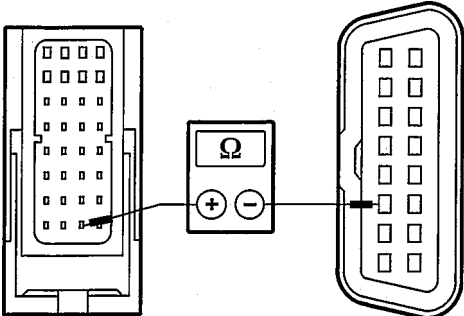
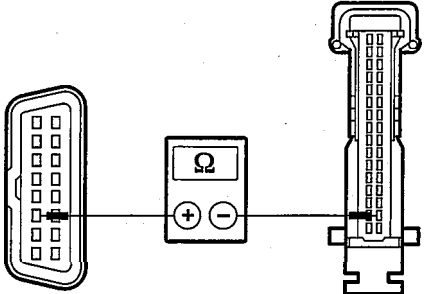
→ **No**

LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.

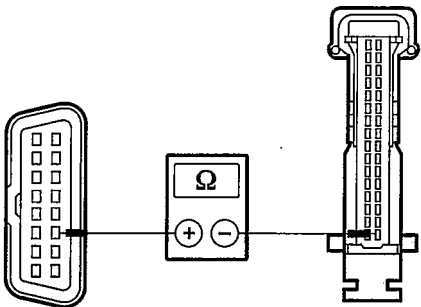
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
M31: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
 <p>VFE0033605</p>	<p>1 Disconnect connector C343 from the PCM.</p> <p>2 Measure the resistance between the PCM, connector C343, pin F31, circuit 4-EC7 (GY/RD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to M32.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
M32: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
 <p>VFE0033608</p>	<p>1 Measure the resistance between the PCM, connector C343, pin F19, circuit 5-EC7 (BU/RD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
M33: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT	
 <p>E58252</p>	<p>1 Measure the resistance between the PCM, connector C375, pin A4, circuit 4-EC7 (GY/RD), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to M34.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>M34: CHECK THE CIRCUIT BETWEEN THE PCM AND THE DLC FOR OPEN CIRCUIT</p>  <p>E58253</p>	<p>Measure the resistance between the PCM, connector C375, pin A3, circuit 5-EC7 (BUIRD), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the PCM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>M35: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC</p>  <p>VFE0033606</p>	<p><input type="checkbox"/> Disconnect Connector C339 from electronic instrument cluster.</p> <p>2 Measure the resistance between the electronic instrument cluster, connector C339, pin 31, circuit 5-EC8A (BU/WH), wiring harness side and the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side.</p> <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to M36.</p> <p>→ No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
M36: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC	
 <p>VFE0033603</p>	<p>1 Measure the resistance between the electronic instrument cluster, connector C339, pin 32, circuit 4-EC8A (GY/VT), wiring harness side and the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles without automatic clutch and gear-shift actuation: GO to M37. Vehicles with automatic clutch and gearshift actuation: GO to M41. <p>→ No</p> <p>LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
M37: PERFORM NETWORK TEST	
<p>NOTE:The number of modules connected to the HS CAN bus depends on the equipment levels of the vehicle. Therefore not every vehicle will have all the modules mentioned below.</p>	
	<input type="checkbox"/> Connect the ground cable to the battery.
	<p>2 Connect the diagnostic tool.</p>
	<p><input type="checkbox"/> Disconnect a listed component, then perform the following test step:</p> <ul style="list-style-type: none"> Vehicles with ESP: connector 303 from electronic stability program module Vehicles with ABS: connector C304 from ABS module Vehicles with automatic transmission connector C428 from automatic transmission module Connector C281 from the power steering pump module

DIAGNOSIS AND TESTING

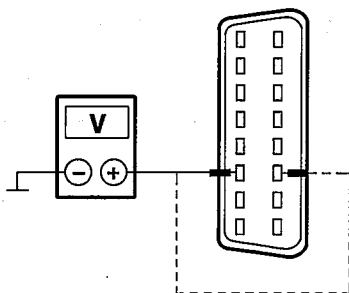
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

- 4** Select the vehicle with the diagnostic tester.
- Is it possible to establish communication with the PCM?
- **Yes**
The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.
- **No**
- If not all the listed components are disconnected:
Key in the OFF position. DISCONNECT the next component (go to test step 3).
 - If all the listed components are disconnected:
GO to M38.

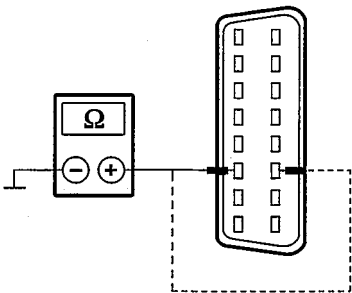
M38: CHECK THE HS CAN BUS FOR A SHORT TO VOLTAGE SUPPLY

- 1** Ignition switch in position 0.
- 2** Disconnect Vehicles with 1.6L diesel engine: connector C384 from the PCM.
- 3** Disconnect Vehicles with 2.0L petrol engine: connector C380 from the PCM.
- ☐ Disconnect Vehicles with 1.4L diesel engine with electric exhaust gas recirculation valve (EGR): connector C375 from the PCM.
- 5** Disconnect Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): connector C370 from the PCM.
- 6** Disconnect Vehicles with 1.25L, 1.4L or 1.6L petrol engine / vehicles with 1.3L Duratec-8V (Rocam) engine: connector C343 from the PCM.
- 7** Ignition switch in position II.
- ☐ Measure the voltage between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.

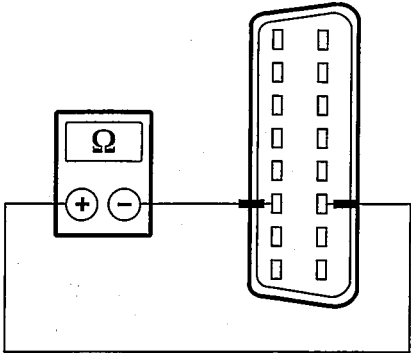


VFE0038142

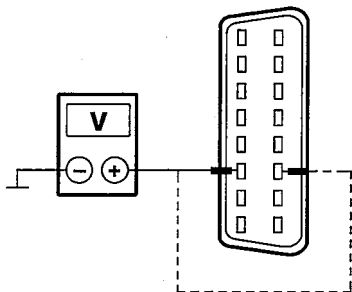
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<p>9 Measure the voltage between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a voltage measured? <p>→ Yes LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p> <p>→ No GO to M39.</p>
M39: CHECK THE HS CAN BUS FOR A SHORT TO GROUND	
 <p>VFE0038143</p>	<p>1 Ignition switch in position 0.</p> <p>2 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.</p>
	<p><input type="checkbox"/> Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BUIRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 Ohm measured in both cases? <p>→ Yes GO to M40.</p> <p>→ No LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

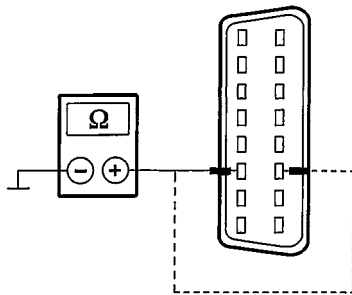
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>M40: CHECK THE HS CAN BUS FOR SHORT CIRCUIT</p>  <p>E45951</p>	<p>1 Measure the resistance at the DLC, connector C308, between pin 6, circuit 4-EC1 (GY/RD), wiring harness side and pin 14, circuit 5-EC1 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 Ohm measured in both cases? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the short circuit in the HS CAN Bus using the Wiring Diagrams. CHECK the operation of the system.</p>
<p>M41: PERFORM NETWORK TEST</p>	<p>1 Connect the ground cable to the battery.</p> <p>2 Connect the diagnostic tool.</p> <p>3 Disconnect a listed component, then perform the following test step:</p> <ul style="list-style-type: none"> Vehicles with ESP: connector 303 from electronic stability program module Vehicles with ABS: connector C304 from ABS module Vehicles with automatic clutch and gearshift actuation: connector C679 from transmission selector unit Connector C339 from electronic instrument cluster Connector C281 from the power steering pump module <p><input type="checkbox"/> Select the vehicle with the diagnostic tester.</p> <ul style="list-style-type: none"> Is it possible to establish communication with the PCM? <p>→ Yes The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.</p> <p>→ No</p> <ul style="list-style-type: none"> If not all the listed components are disconnected: Key in the OFF position. DISCONNECT the next component (go to test step 3). If all the listed components are disconnected: GO to M42.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILSRESULTSIACTIONS
M42: CHECK THE HS CAN BUS FOR A SHORT TO VOLTAGE SUPPLY	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0. 2 Disconnect connector C676 from transmission control module (TCM). 3 Disconnect Vehicles with 1.6L diesel engine: connector C384 from the PCM. 4 Disconnect Vehicles with 1.4L diesel engine without electric exhaust gas recirculation valve (EGR): connector C370 from the PCM. 5 Disconnect Vehicles with 1.4L petrol engine: connector C343 from the PCM. 6 Ignition switch in position II.
 <p>VFE0038142</p>	<input type="checkbox"/> Measure the voltage between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.
	<input type="checkbox"/> Measure the voltage between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and ground. <ul style="list-style-type: none"> • Is a voltage measured? → Yes LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams. CHECK the operation of the system. → No GO to M43.
M43: CHECK THE HS CAN BUS FOR A SHORT TO GROUND	
	<ol style="list-style-type: none"> 1 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VFE0038143

DETAILS/RESULTS/ACTIONS

- 2 Measure the resistance between the DLC, connector C308, pin 6, circuit 4-EC1 (GY/RD), wiring harness side and ground.

- Measure the resistance between the DLC, connector C308, pin 14, circuit 5-EC1 (BU/RD), wiring harness side and ground.

- Is a resistance greater than 10,000 Ohm measured in both cases?

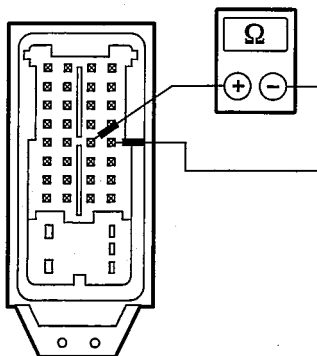
→ **Yes**

GO to M44.

→ **No**

LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

M44: CHECK THE TCM FOR BREAKS



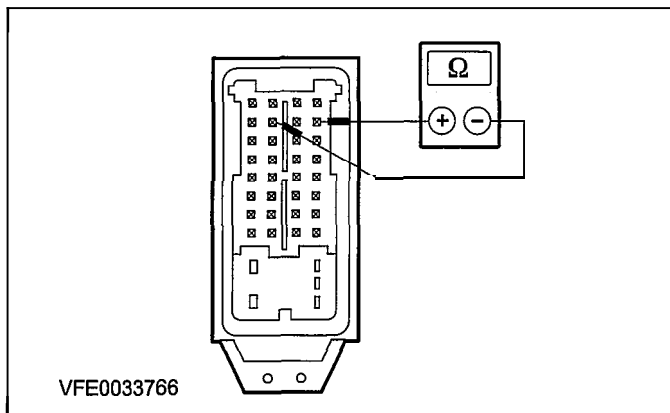
VFE0033765

- 1 Measure the resistance at TCM, connector C676, between pin 54 and pin 61, component side.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS



☐ Measure the resistance at TCM, connector C676, between pin 56 and pin 63, component side.

- Is a resistance of less than 2 Ohms measured in both cases?

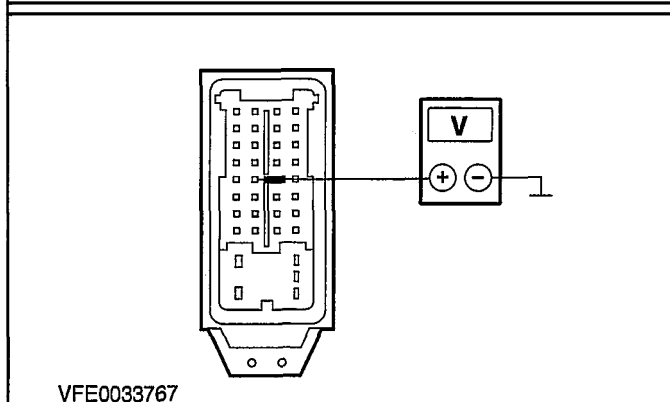
→ **Yes**

GO to M45.

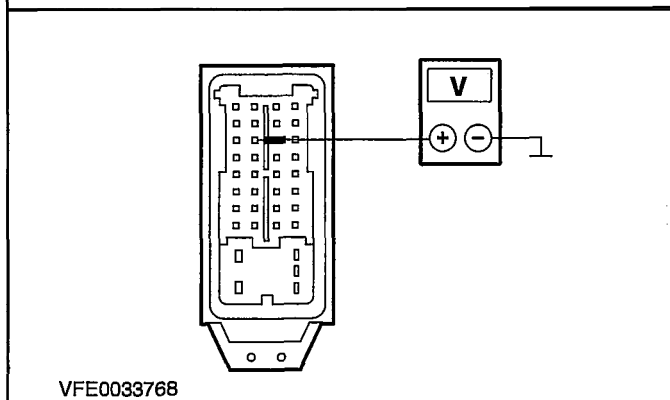
→ **No**

CHECK the TCM and RENEW as necessary.
CHECK the operation of the system.

M45: CHECK THE HS CAN BUS BETWEEN TCM AND PCM FOR SHORT TO VOLTAGE



1 Measure the voltage between the TCM, connector C676, pin 61, circuit 4-EC7 (GY/RD) and ground.



☐ Measure the voltage between the TCM, connector C676, pin 63, circuit 5-EC7 (BU/RD) and ground.

- Is a voltage measured?

→ **Yes**

LOCATE and REPAIR the short to voltage in the affected circuit using the Wiring Diagrams.
CHECK the operation of the system.

→ **No**

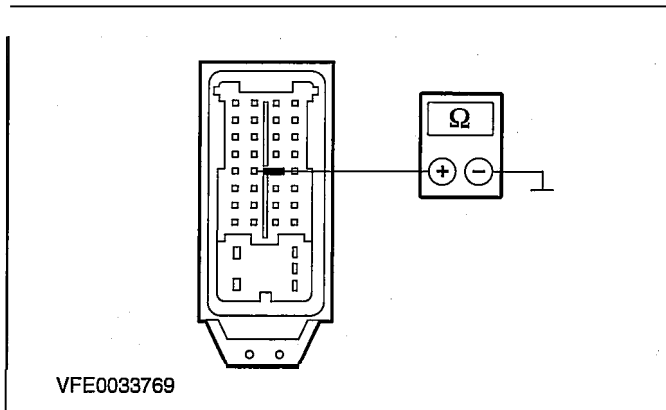
GO to M46.

DIAGNOSIS AND TESTING

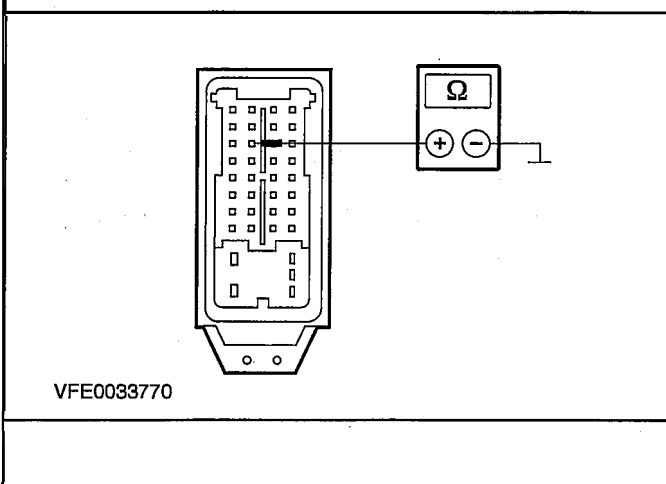
TEST CONDITIONS

DETAILS RESULTS ACTIONS

M46: CHECK THE HS CAN BUS BETWEEN TCM AND PCM FOR SHORT TO GROUND

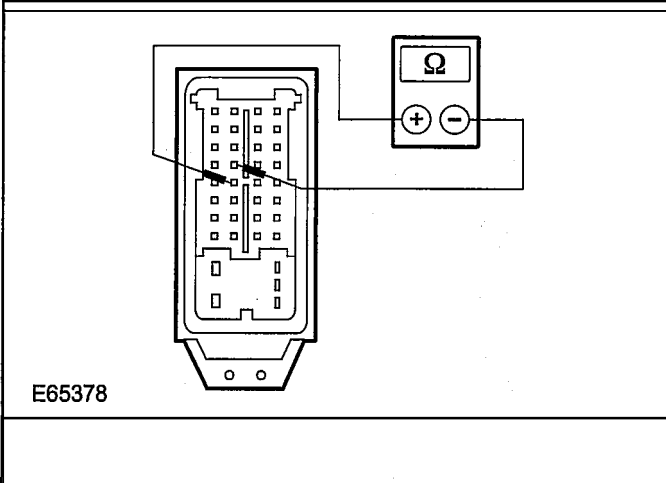


- 1 Measure the resistance between the TCM, connector C676, pin 61, circuit 4-EC7 (GY/RD) and ground.



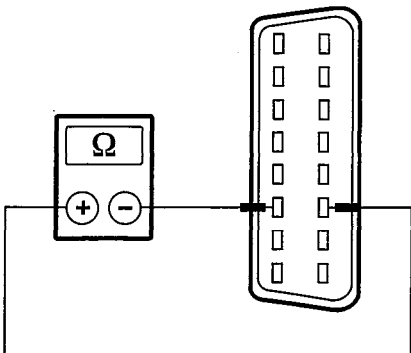
- 2 Measure the resistance between the TCM, connector C676, pin 63, circuit 5-EC7 (BUIRD) and ground.
 - Is a resistance greater than 10,000 Ohm measured in both cases?
 - **Yes**
GO to M47.
 - **No**
LOCATE and RECTIFY the short to ground in the affected circuit using the Wiring Diagrams. CHECK the operation of the system.

M47: CHECK THE HS CAN BUS FOR SHORT CIRCUIT



- 1 Measure the resistance at the TCM, connector C676, between pin 61, circuit 4-EC7 (GY/RD), wiring harness side and pin 63, circuit 5-EC7 (BUIRD), wiring harness side.
 - Is a resistance greater than 10,000 Ohm measured in both cases?
 - **Yes**
GO to M48.
 - **No**
LOCATE and REPAIR the short circuit in the HS CAN Bus using the Wiring Diagrams. CHECK the operation of the system.

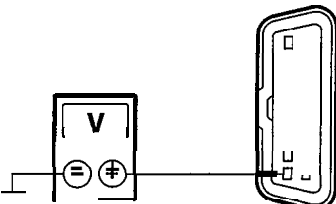
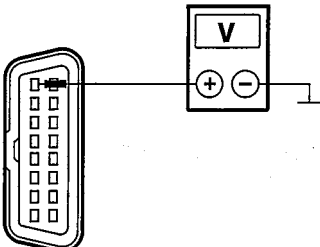
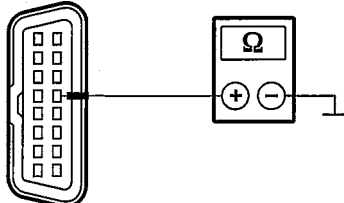
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
M48: CHECK THE HS CAN BUS FOR SHORT CIRCUIT	
 <p>E45951</p>	<p>1 Measure the resistance at the DLC, connector C308, between pin 6, circuit 4-EC1 (GY/RD), wiring harness side and pin 14, circuit 5-EC1 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance greater than 10,000 Ohm measured in both cases? <p>→ Yes CHECK the PCM and RENEW if necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the short circuit in the HS CAN Bus using the Wiring Diagrams. CHECK the operation of the system.</p>

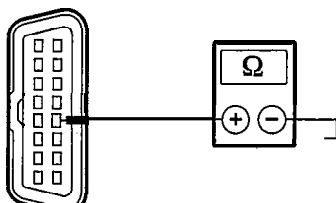
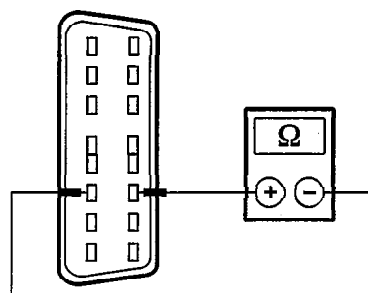
PINPOINT TEST X : FAULTY COMMUNICATION BETWEEN THE MODULES - MS CAN BUS.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>⚠ CAUTION: The measurements below may only be performed using the WDS digital multimeter. Failure to observe this instruction can lead to damage.</p>	
N1: CHECK FUSE F18	
	<p>1 Ignition switch in position 0.</p> <p><input type="checkbox"/> CHECK fuse F18 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to N2.</p> <p>→ No RENEW fuse F18 (15 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.</p>
N2: CHECK THE VOLTAGE AT FUSE F18	
	<p>1 Connect fuse F18 (CJB).</p> <p>2 Measure the voltage between fuse F18 (15 A) and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to N3.</p> <p>→ No REPAIR the voltage supply to fuse F18 using the Wiring Diagrams. CHECK the operation of the system.</p>




DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
N3: CHECK THE VOLTAGE AT THE DATA LINK CONNECTOR (DLC)	
 <p>VFE0028957</p>	<input type="checkbox"/> Measure the voltage between the DLC, connector C308, pin 16, circuit 29-RA1 (OG), wiring harness side and ground. <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes</p> <ul style="list-style-type: none"> Vehicles with ABS or electronic stability program: GO to N4. Vehicles without ABS or electronic stability program: GO to N5. <p>→ No LOCATE and RECTIFY the break in circuit 29-RA1 (OG) between DLC and fuse F18 using the Wiring Diagrams. CHECK the operation of the system.</p>
N4: CHECK THE VOLTAGE AT THE DLC	
 <p>VFE0028963</p>	<p>1 Ignition switch in position II.</p> <p>2 Measure the voltage between the DLC, connector C308, pin 9, circuit 15-RA1 (GNIRD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is battery voltage measured? <p>→ Yes GO to N5.</p> <p>→ No LOCATE and REPAIR the break in circuit 15-RA1 (GNIRD) between the DLC and the ignition switch using the Wiring Diagrams. CHECK the operation of the system.</p>
N5: CHECK THE GROUND CONNECTION OF THE DLC - PIN 4	
 <p>VFE0028965</p>	<input type="checkbox"/> Ignition switch in position 0. <p>2 Measure the resistance between the DLC, connector C308, pin 4, circuit 31-RA1 (BK), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to N6.</p> <p>→ No LOCATE and REPAIR the open circuit between the DLC and ground connection G25 using the Wiring Diagrams. CHECK the operation of the system.</p>

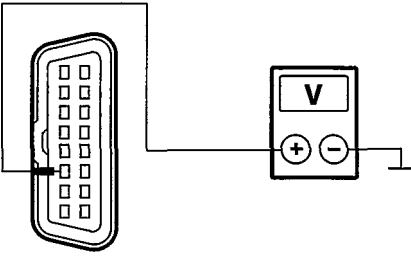
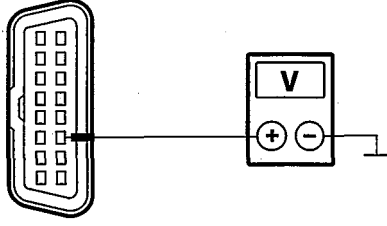
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
N6: CHECK THE GROUND CONNECTION OF THE DLC - PIN 5	
 <p>VFE0028964</p>	<p><input type="checkbox"/> Measure the resistance between the DLC, connector C308, pin 5, circuit 91-RA1 (BWO), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohms registered? <p>→ Yes GO to N7.</p> <p>→ No LOCATE and REPAIR the break in circuit 91-RA1 (BWO) between the DLC and ground connection G31 using the Wiring Diagrams. CHECK the operation of the system.</p>
N7: CHECK THE MS CAN BUS FOR SHORT CIRCUIT	
 <p>E45952</p>	<p>1 Disconnect the ground cable from the battery.</p> <p>Measure the resistance between the DLC, connector C308, between pin 3, circuit 4-EC2 (GY/RD), wiring harness side and pin 11, circuit 5-EC2 (BU/RD), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of between 55 and 65 Ohms measured? <p>→ Yes GO to N8.</p> <p>→ No If a resistance between 115 and 120 Ohms is measured: GO to N14. If no resistance between 115 and 120 Ohms is measured: GO to N19.</p>

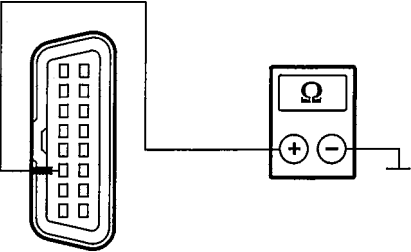
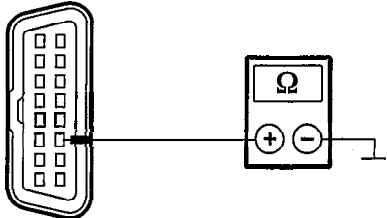
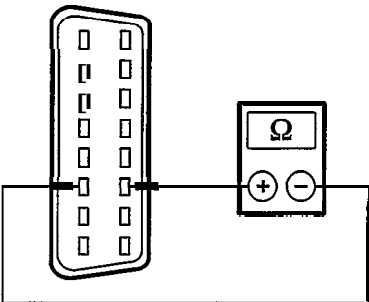
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
N8: PERFORM NETWORK TEST (RESTRAINTS CONTROL MODULE (RCM))	
WARNINGS:  The backup power supply must be depleted to prevent the risk of accidental airbag deployment. After disconnecting the battery, wait at least 1 minute before starting work on the safety restraint system (SRS). Failure to follow these instructions may result in personal injury.	
 Do not program any keycodes while working on the safety restraint system in order to prevent the risk of accidental deployment of safety restraint system components. Failure to follow these instructions may result in personal injury.	
 Never probe the electrical connectors of air bag modules or any other supplemental restraint system component. Failure to follow these instructions may result in personal injury.	
NOTE: After connecting the battery, initialize the power window motors.	
	<input type="checkbox"/> 1 Disconnect connector C500 from restraints control module (RCM).
	<input type="checkbox"/> 2 Connect ground cable from battery.
	<input type="checkbox"/> Connect the diagnostic tool.
	<input type="checkbox"/> 4 Select the vehicle with the diagnostic tester. <ul style="list-style-type: none"> Is it possible to establish communication with the GEM? <ul style="list-style-type: none"> → Yes CHECK and if necessary RENEW the restraints control module. CHECK the operation of the system. → No GO to N9.
N9: PERFORM NETWORK TEST	
NOTE: The number of modules connected to the MS CAN bus depends on the equipment levels of the vehicle. Therefore not every vehicle will have all the modules mentioned below.	
	<input type="checkbox"/> 1 Ignition switch in position 0.
	<input type="checkbox"/> Disconnect a listed component, then perform the following test step: <ul style="list-style-type: none"> - Audio system control panel C775 - Electronic automatic temperature control (EATC) module C367 - Bluetooth/voice control module C796 - Electronic instrument cluster C339

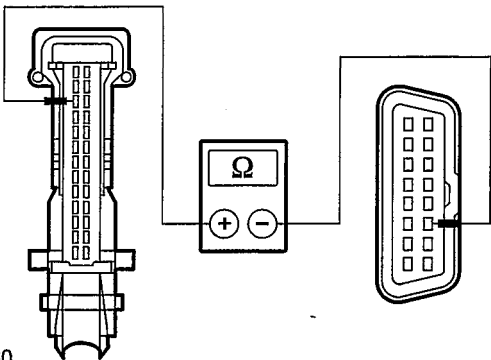
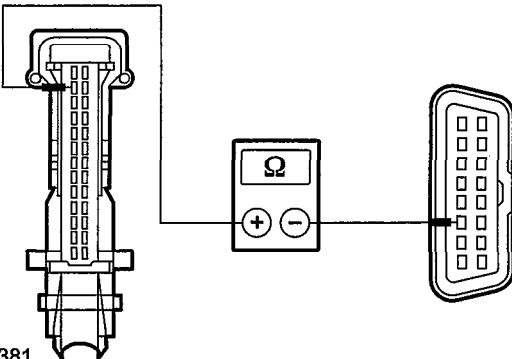
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div> <input type="checkbox"/> Select the vehicle with the diagnostic tester. </div> <ul style="list-style-type: none"> Is it possible to establish communication with the GEM? <div> <p>→ Yes The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system.</p> </div> <div> <p>→ No - If not all the listed components are disconnected: DISCONNECT the next component (go to test step 1). - If all the listed components are disconnected: GO to N10.</p> </div>
N10: CHECK THE MS CAN BUS FOR A SHORT TO VOLTAGE SUPPLY	
	<div>1 Ignition switch in position 0.</div> <div><input type="checkbox"/> Disconnect Connector C320 from GEM.</div> <div>3 Ignition switch in position II. </div>
 <p>E65386</p>	<div><input type="checkbox"/> Measure the voltage between the DLC, connector C308, pin 3, circuit 4-EC2 (GY/RD), wiring harness side and ground.</div> <ul style="list-style-type: none"> Is a voltage measured? <div> <p>→ Yes LOCATE and RECTIFY the short to voltage supply in the circuits connected to soldered connection S278 using the Wiring Diagrams. CHECK the operation of the system.</p> </div> <div> <p>→ No GO to N11.</p> </div>
N11: CHECK THE MS CAN BUS FOR A SHORT TO VOLTAGE SUPPLY	
 <p>E65387</p>	<div><input type="checkbox"/> Measure the voltage between the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side and ground.</div> <ul style="list-style-type: none"> Is a voltage measured? <div> <p>→ Yes LOCATE and RECTIFY the short to voltage supply in the circuits connected to soldered connection S277 using the Wiring Diagrams. CHECK the operation of the system.</p> </div> <div> <p>→ No GO to N12.</p> </div>

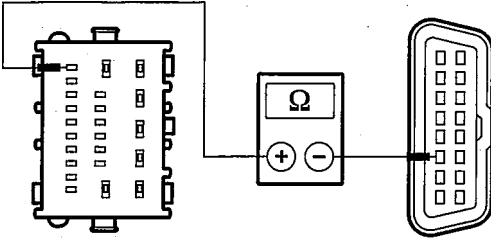
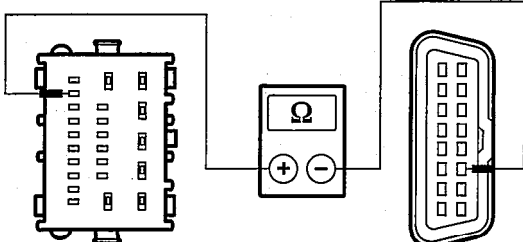
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
N12: CHECK THE MS CAN BUS FOR A SHORT TO GROUND	
 <p>E65388</p>	<p><input type="checkbox"/> Ignition switch in position 0.</p> <p>2 Measure the resistance between the DLC, connector C308, pin 3, circuit 4-EC2 (GY/RD), wiring harness side and ground.</p> <p>Is a resistance of more than 10,000 ohms measured?</p> <p>→ Yes GO to N13.</p> <p>→ No LOCATE and RECTIFY the short to ground in the circuits connected to soldered connection S278 using the Wiring Diagrams. CHECK the operation of the system.</p>
N13: CHECK THE MS CAN BUS FOR A SHORT TO GROUND	
 <p>E65389</p>	<p>1 Measure the resistance between the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of more than 10,000 ohms measured? <p>→ Yes TEST the GEM and RENEW as necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the short to ground in the circuits connected to soldered connection S277 using the Wiring Diagrams. CHECK the operation of the system.</p>
N14: CHECK THE MS CAN BUS FOR SHORT CIRCUIT	
 <p>E45952</p>	<p>1 Disconnect Connector C339 from electronic instrument cluster.</p> <p><input type="checkbox"/> Measure the resistance between the DLC, connector C308, between pin 3, circuit 4-EC2 (GY/RD), wiring harness side and pin 11, circuit 5-EC1QJ (BU), wiring harness side.</p> <ul style="list-style-type: none"> is a resistance of between 115 and 120 Ohms measured? <p>→ Yes GO to N15.</p> <p>→ No GO to N17.</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
N15: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DATA LINK CONNECTOR (DLC)	
 <p>E65380</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the electronic instrument cluster, connector C339, pin 11, circuit 5-EC10 (BU), wiring harness side and the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <ul style="list-style-type: none"> → Yes GO to N16. → No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.
N16: CHECK FOR OPEN CIRCUIT BETWEEN THE ELECTRONIC INSTRUMENT CLUSTER AND THE DLC	
 <p>E65381</p>	<ol style="list-style-type: none"> 1 Measure the resistance between the electronic instrument cluster, connector C339, pin 12, circuit 4-EC10 (GY), wiring harness side and the DLC, connector C308, pin 3, circuit 4-EC2 (GY/RD), wiring harness side. <ul style="list-style-type: none"> • Is a resistance of less than 2 Ohms registered? <ul style="list-style-type: none"> → Yes CHECK and if necessary RENEW the electronic instrument cluster. CHECK the operation of the system. → No LOCATE and RECTIFY the break in the circuit between the electronic instrument cluster and the DLC using the Wiring Diagrams. CHECK the operation of the system.
N17: CHECK FOR OPEN CIRCUIT BETWEEN THE GEM AND THE DLC.	
	<ol style="list-style-type: none"> 1 Disconnect Connector C320 from GEM.

DIAGNOSIS AND TESTING

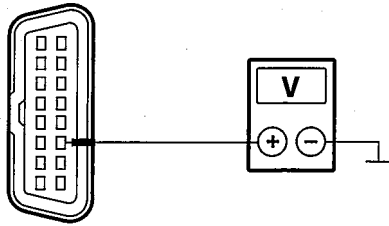
TEST CONDITIONS	DETAILS RESULTS ACTIONS
 <p>E65376</p>	<p>Measure the resistance between the GEM, connector C320, pin 23, circuit 4-EC14 (GY/OG), wiring harness side and the DLC, connector C308, pin 3, circuit 4-EC2 (GY/RD), wiring harness side.</p> <p>Is a resistance of less than 2 Ohms registered?</p> <p>→ Yes GO to N18.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the GEM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
N18: CHECK FOR OPEN CIRCUIT BETWEEN THE GEM AND THE DLC.	
 <p>E65377</p>	<p>Measure the resistance between the GEM, connector C320, pin 22, circuit 5-EC14 (BU/BK), wiring harness side and the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side.</p> <p>• Is a resistance of less than 2 Ohms registered?</p> <p>→ Yes TEST the GEM and RENEW as necessary. CHECK the operation of the system.</p> <p>→ No LOCATE and REPAIR the break in the circuit between the GEM and the DLC using the Wiring Diagrams. CHECK the operation of the system.</p>
N19: PERFORM NETWORK TEST (RESTRAINTS CONTROL MODULE (RCM))	
<p>WARNINGS:</p> <p>▲ The backup power supply must be depleted to prevent the risk of accidental airbag deployment. After disconnecting the battery, wait at least 1 minute before starting work on the safety restraint system (SRS). Failure to follow these instructions may result in personal injury.</p>	
<p>▲ Do not program any keycodes while working on the safety restraint system in order to prevent the risk of accidental deployment of safety restraint system components. Failure to follow these instructions may result in personal injury.</p>	
<p>▲ Never probe the electrical connectors of air bag modules or any other supplemental restraint system component. Failure to follow these instructions may result in personal injury.</p>	
<p>NOTE: After connecting the battery, initialize the power window motors.</p>	
	<p>Disconnect connector C500 from restraints control module (RCM).</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	<div><input type="checkbox"/> Connect ground cable from battery.</div> <div><input type="checkbox"/> Connect the diagnostic tool.</div> <div> <div>4 Select the vehicle with the diagnostic tester.</div> <div> <ul style="list-style-type: none"> Is it possible to establish communication with the GEM? </div> <div> <div>→ Yes</div> <div>CHECK and if necessary RENEW the restraints control module. CHECK the operation of the system.</div> </div> <div> <div>→ No</div> <div>GO to N20. </div> </div> </div>
N20: PERFORM NETWORK TEST	
NOTE: The number of modules connected to the MS CAN bus depends on the equipment levels of the vehicle. Therefore not every vehicle will have all the modules mentioned below.	
	<div> <input type="checkbox"/> Disconnect a listed component, then perform the following test step: <ul style="list-style-type: none"> Electronic instrument cluster C339 Audio system control panel C775 Electronic automatic temperature control (EATC) module C367 Bluetooth/voice control module C796 </div> <div> <input type="checkbox"/> Select the vehicle with the diagnostic tester. <ul style="list-style-type: none"> Is it possible to establish communication with the GEM? <div> <div>→ Yes</div> <div>The component disconnected last is the cause of the concern, CHECK component and if necessary RENEW. CHECK the operation of the system. </div> </div> <div> <div>→ No</div> <div> <ul style="list-style-type: none"> If not all the listed components are disconnected: DISCONNECT the next component (go to test step I). If all the listed components are disconnected: GO to N21. </div> </div> </div>
N21: CHECK THE MS CAN BUS FOR A SHORT TO VOLTAGE SUPPLY	
	<div><input type="checkbox"/> Ignition switch in position 0.</div> <div><input type="checkbox"/> Disconnect Connector C320 from GEM.</div> <div><input type="checkbox"/> Ignition switch in position II. </div>

DIAGNOSIS AND TESTING

TEST CONDITIONS



E65387

DETAILS/RESULTS/ACTIONS

- 4 Measure the voltage between the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side and ground.

• Is a voltage measured?

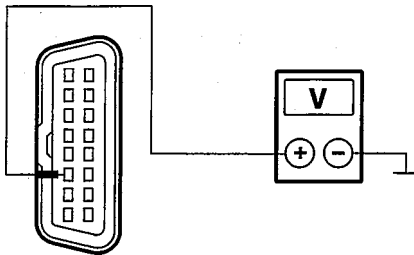
→ **Yes**

LOCATE and RECTIFY the short to voltage supply in the circuits connected to soldered connection S277 using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to N22.

N22: CHECK THE MS CAN BUS FOR A SHORT TO VOLTAGE SUPPLY



E65386

- Measure the voltage between the DLC, connector C308, pin 3, circuit 4-EC2 (GYIRD), wiring harness side and ground.

• Is a voltage measured?

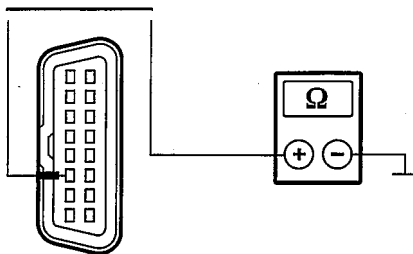
→ **Yes**

LOCATE and RECTIFY the short to voltage supply in the circuits connected to soldered connection S278 using the Wiring Diagrams. CHECK the operation of the system.

→ **No**

GO to N23.

N23: CHECK THE MS CAN BUS FOR A SHORT TO GROUND



E65388

- 1 Ignition switch in position 0.

- 2 Measure the resistance, between the DLC, connector C308, pin 3, circuit 4-EC2 (GYIRD), wiring harness side and ground.

• Is a resistance of more than 10,000 ohms measured?

→ **Yes**

GO to N24.

→ **No**

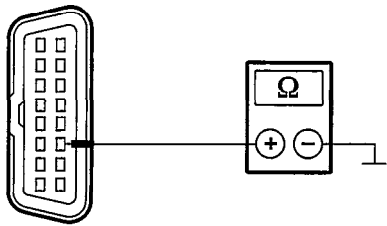
LOCATE and RECTIFY the short to ground in the circuits connected to soldered connection S278 using the Wiring Diagrams. CHECK the operation of the system.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

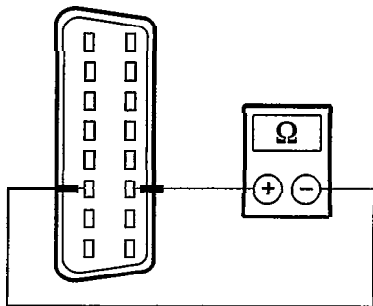
N24: CHECK THE MS CAN BUS FOR A SHORT TO GROUND



E65389

- 1 Measure the resistance between the DLC, connector C308, pin 11, circuit 5-EC2 (BU/RD), wiring harness side and ground.
 - Is a resistance of more than 10,000 ohms measured?
 - **Yes**
GO to N25.
 - **No**
LOCATE and RECTIFY the short to ground in the circuits connected to soldered connection S277 using the Wiring Diagrams. CHECK the operation of the system.

N25: CHECK THE MS CAN BUS FOR SHORT CIRCUIT

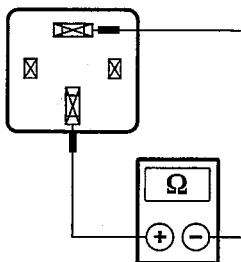


E45952

- 1 Measure the resistance between the DLC, connector C308, between pin 3, circuit 4-EC2 (GY/RD), wiring harness side and pin 11, circuit 5-EC2 (BU/RD), wiring harness side.
 - Is a resistance greater than 10,000 Ohm measured in both cases?
 - **Yes**
TEST the GEM and RENEW as necessary. CHECK the operation of the system.
 - **No**
LOCATE and REPAIR the short circuit in the MS CAN bus using the Wiring Diagrams. CHECK the operation of the system.

Component Tests

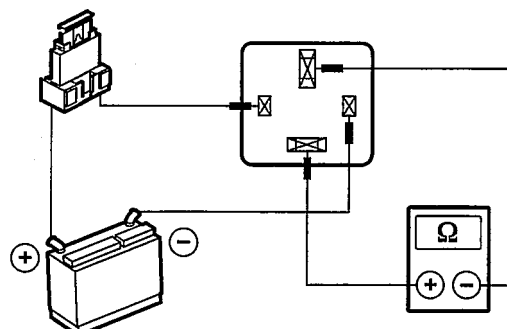
PCM module relay



VFE0031236

1. Check the normally open contact in the unswitched state:

1. Measure the resistance at the PCM module relay, between pin 3, component side and pin 5, component side.
2. Is a resistance of more than 40,000 ohms measured?
3. If yes, go to 2.
4. If no, RENEW the PCM module relay.



VFE0037802

DIAGNOSIS AND TESTING

2. Check the normally open contact in the switched state:
 1. Use a fused test cable (A) to connect pin 1 of the PCM module relay, component side, to the battery positive terminal.
 2. Use a test cable to connect pin 2 of the PCM module relay, component side, to the battery negative terminal.
 3. Measure the resistance at the PCM module relay, between pin 3, component side and pin 5, component side.
 4. Is a resistance of less than 2 Ohms registered?
 5. If yes, then the PCM module relay is OK.
 6. If no, RENEW the PCM module relay.



SECTION 418-01 Module Configuration

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
DIAGNOSIS AND TESTING	
Module Configuration.....	418-01-2
Description of operation.....	418-01-2



DIAGNOSIS AND TESTING**Module Configuration****Description of operation**

Configuration of a new module is performed using WDS. In doing so, the same system requirements must apply as for the diagnosis of the respective module:

- The BUS connection between the module and WDS must be in order.
- The voltage supply to the module and to WDS must be guaranteed.

For this reason, if there are communication problems which cannot be attributed to the incorrect software version in WDS, the system test for module communication of the particular module must be performed. For further information, refer to REFER to Section 418-00 [Module Communications Network].

SECTION 419-01A Anti-Theft - Active

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

DIAGNOSIS AND TESTING

Anti-Theft - Active.....	419-01A-2
Inspection and Verification.....	419-01A-2

DIAGNOSIS AND TESTING**Anti-Theft - Active**

Refer to Wiring Diagrams Section 419-01A, for schematic and connector information.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none">• Misaligned door(s), hood or liftgate• Latch(es)• Cable(s)• Switch(es)• Lock cylinder(s)• Linkage(s)	<ul style="list-style-type: none">• Fuse(s)• Wiring harness• Electrical connector(s)• Relay(s)• Generic electronic module (GEM)• Anti-theft alarm horn• Anti-theft alarm horn with integral battery

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to WDS to diagnose the system.

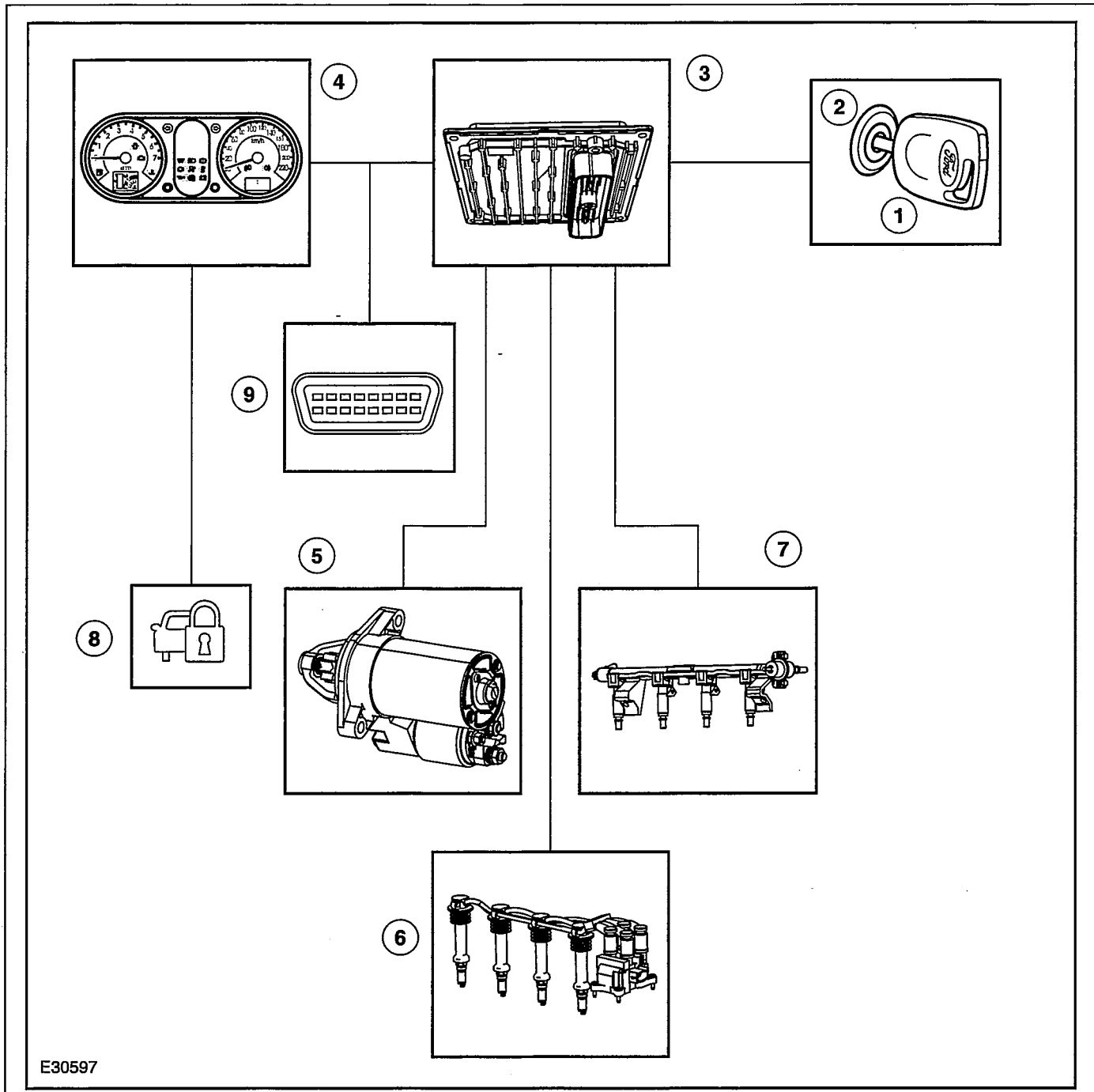
SECTION 419-01B Anti-Theft - Passive

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
DESCRIPTION AND OPERATION	
Anti-Theft - Passive.....	419-01B-2
Function.....	419-01B-2
Key programming.....	419-01B-3
Anti-Theft - Passive.....	419-01B-4
Expanded passive anti-theft system (PATS) functionality.....	419-01B-4
DIAGNOSIS AND TESTING	
Anti-Theft - Passive.....	419-01B-5
Inspection and Verification.....	419-01B-5
GENERALPROCEDURES	
Key Programming Using Two Programmed Keys..... (33 005 0)	419-01B-10
Key Programming Using Diagnostic Equipment..... (33 005 0)	419-01B-11
Key Programming Switch State Control.....	419-01B-12
Erasing All Key Codes Using Diagnostic Equipment.....	419-01B-13
Anti-Theft Security Access..... (33 004 0)	419-01B-14

DESCRIPTION AND OPERATION

Anti-Theft - Passive



Item	Description
1	Transponder in the key
2	Transceiver in the ignition lock
3	Powertrain control module (PCM)
4	Instrument Cluster
5	Starter motor
6	Electronic ignition (EI)
7	Injectors

Item	Description
8	Passive anti-theft system (PATS) warning lamp
9	Data link connector (DLC)

Function

PATS is a passive system designed to increase the anti-theft security of a vehicle. It does not need to be activated or deactivated by the driver.

DESCRIPTION AND OPERATION

The PATS system uses specially encoded keys:

Every encoded ignition key contains a transponder which is permanently fitted to the key. This transponder contains an identification code randomly selected from millions of possible combinations (crypto-transponder with automatically changing code).

The transmitter/receiver (transceiver) is located on the ignition lock. The transceiver incorporates an antenna which is connected to an integrated electronics module.

When the ignition key is turned to position II, communications take place initially between the transceiver and the PCM.

If these communications are free of errors, then the transponder is actuated by the PCM via the transceiver.

The transponder returns the identification code to the PCM for processing.

In the event of a system fault, the PATS outputs a corresponding flash code.

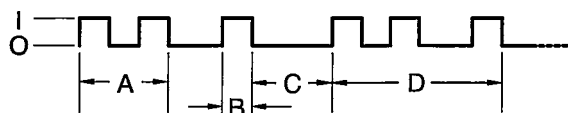
Key programming

Every encoded key must be programmed into the (PCM) before it can be used to start the engine.

Keys can be programmed either by authorised Ford dealers with WDS and access to OASIS, or directly by the customer if two keys which have already been programmed are available.

Up to eight keys can be programmed.

PATS warning lamp



VUE0013836

Flash code for PATS (example: code 21)

Item	Description
0	Warning lamp OFF
■	Warning lamp ON
A	Two flashing signals (1st digit)
B	One flashing signal (2nd digit)
C	Approx. 3-second pause
D	Repetition of the flash code

As an optical signal, the (PATS) system sends an actuation signal to the PATS warning lamp approx. every 2 seconds when the ignition lock is in position "0" .

DESCRIPTION AND OPERATION**Anti-Theft - Passive****Expanded passive anti-theft system (PATS) functionality**

The PATS functionality has been expanded to increase anti-theft security. The new system also uses new keys.

NOTE: Only keys with a blue insert and the labelling "W1" can be used.

After completion of the usual PATS communications between the transponder, transceiver and the powertrain control module (PCM), the PCM also requests a code from the instrument cluster module via the CAN databus in order to increase the passive anti-theft security.

As a result, a further component which is not easily removable is required to enable an engine start.

All of the code requests must be completed successfully before the PCM will start the engine.

NOTE: When renewing the instrument cluster or the PCM an initialisation with WDS is required.

In order to ensure that the engine can be started as quickly as possible, the initial starting procedure is initiated provided the correct key has been detected and no communications errors to the instrument cluster have arisen.

However, if the PCM determines within a maximum of three seconds that not all of the PATS conditions have been satisfied, then the engine is switched back off and cannot be restarted (no starter signal, no fuel injection signal, no ignition signal).

DIAGNOSIS AND TESTING**Anti-Theft - Passive**

Refer to Wiring Diagrams Section 419-01B, for schematic and connector information.

General Equipment

Worldwide Diagnostic System (WDS)

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> - Ignition lock cylinder - Passive anti-theft system (PATS) ignition key (blue dot) - Non-PATS ignition key - Use of a non-programmed PATS ignition key - Use of a non-encoded PATS ignition key - More than one PATS key in close proximity of the PATS transceiver 	<ul style="list-style-type: none"> - Fuse(s) - Wiring harness(s) - Electrical connector(s) - Relay(s) - PATS transceiver - Ignition switch - Powertrain control module (PCM) - Instrument cluster

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, use WDS to retrieve any DTCs and refer to the Diagnostic Trouble Code (DTC) Index.

Diagnostic Trouble Code (DTC) Index

DTC	Indicator Flash Code	Description/Condition	Possible Source	Action
0000	-	No DTCs, vehicle OK	-	
B1681	11	PATS transceiver signal is not received	PATS transceiver wiring, PATS transceiver connector, PATS transceiver, PCM or instrument cluster	REFER to WDS.
B1232 and B2103	12	PATS transceiver antenna coil fault, vehicle does not start	PATS transceiver, PATS transceiver mounting	Make sure the PATS transceiver is connected correctly, if OK, install a new PATS transceiver.

DIAGNOSIS AND TESTING

DTC	Indicator Flash Code	Description/Condition	Possible Source	Action
B1600	13	Non-PATS key or damaged encoded ignition key, or no key code received, vehicle does not start	PATS encoded ignition key	REFER to WDS. PATS test. Follow the instructions.
B2431	13	PATS transponder programming failed crypto transponder only, vehicle does not start	Ignition key	REFER to WDS. PATS test. Follow the instructions.
B1602	14	Partial key read of PATS key, vehicle does not start	PATS encoded ignition key, PATS transceiver	REFER to WDS. PATS test. Follow the instructions.
B1601	15	Incorrect key code, Unprogrammed PATS key (keycode format OK), vehicle does not start (20 second anti-scan invoked)	PATS encoded ignition key	REFER to WDS. PATS test. Follow the instructions.
U2510	16	CAN communication link between the PCM and instrument cluster, vehicle does not start	Circuit, PCM or instrument cluster	REFER to WDS. PATS test. Follow the instructions.
B1213	21	Number of programmed PATS encoded keys below minimum, vehicle does not start	Incorrect number of keys programmed or PATS encoded ignition key	REFER to WDS. PATS test. Follow the instructions.
B2141	22	NVM Configuration failure. No security ID exchange between PCM and instrument cluster, vehicle does not start	PCM or instrument cluster	REFER to WDS. PATS test. Follow the instructions.

DIAGNOSIS AND TESTING

DTC	Indicator Flash Code	Description/Condition	Possible Source	Action
B2139	23	Data mismatch (received data does not match what was expected). Security messages do not match between PCM and instrument cluster, vehicle does not start	PCM or instrument cluster	

DIAGNOSIS AND TESTING

DTC	Indicator Flash Code	Description/Condition	Possible Source	Action
				<p>REFER to WDS. PATS test. Follow the instructions. If the concern persists. INSTALL a new PCM.</p> <p>REFER to: Powertrain Control Module (PCM) - 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma) (303-14 Electronic Engine Controls, Removal and Installation) / Powertrain Control Module (PCM) - 1.4L Duratorq-TDCi (DV) Diesel (303-14 Electronic Engine Controls, Removal and Installation) / Powertrain Control Module (PCM) - 2.0L Duratec-HE (M14), Vehicles Without: PCM Security Shield (303-14 Electronic Engine Controls, Removal and</p>

DIAGNOSIS AND TESTING

DTC	Indicator Flash Code	Description/Condition	Possible Source	Action
				Installation) / Powertrain Control Module (PCM) - 2.0L Duratec-HE (M14), Vehicles With: PCM Security Shield (303-14 Electronic Engine Controls, Removal and Installation) / Powertrain Control Module (PCM) - 1.6L Duratorq-TDCi (DV) Diesel (303-14 Electronic Engine Controls, Removal and Installation).
P1260	-	PCM disabled	PCM or instrument cluster	REFER to WDS. PATS test. Follow the instructions.

GENERAL PROCEDURES**Key Programming Using Two Programmed Keys(33 005 0)**

NOTE: This procedure only works if two or more programmed ignition keys are available.

For additional information, refer to Key Programming Using Diagnostic Equipment - in this section.

NOTE: If the programming procedure is successful, the new key(s) will start the vehicle and the anti-theft indicator will illuminate for approximately three seconds.

NOTE: If the programming procedure is not successful, the new key(s) will not start the engine. If the programming procedure was not successful, repeat the Key Programming procedure from Step 1. If the failure repeats, refer to Diagnostic and Testing to review DTCs.

NOTE: A maximum of eight ignition keys can be programmed to a passive anti-theft system (PATS) equipped vehicle.

NOTE: If the steps are not carried out as outlined, the programming procedure will end.

NOTE: Ignition keys must have correct mechanical key cut for the vehicle and must be a PATS encoded key.

NOTE: If this procedure does not program new ignition key(s) using two programmed ignition keys, check that the Key Programming Switch State Control is in the DISABLE position.

For additional information, refer to Key Programming Switch State Control - in this section.

1. Insert the first programmed ignition key into the ignition lock cylinder and turn the ignition key from the 0 position to the II Position (maintain the ignition key in the II position for one second).
2. Turn the ignition key to the 0 position and remove the first ignition key from the ignition lock cylinder.
3. Within five seconds of turning the first ignition key to the 0 position, insert the second programmed ignition key into the ignition lock cylinder and turn the ignition key from the 0 position to the II position (maintain the ignition key in the II position for one second).
4. Turn the ignition key to the 0 position and remove the second ignition key from the ignition lock cylinder.
5. Within ten seconds of turning the second ignition key to the 0 position, insert the unprogrammed ignition key (new key) into the ignition lock cylinder and turn the ignition key from the 0 position to the II position (maintain the ignition key in the II position for one second).
6. If it is desired to program additional key(s), repeat the applicable ignition key programming procedure from Step 1.
7. Verify that the engine starts using the new programmed key(s).

GENERAL PROCEDURES

Key Programming Using Diagnostic Equipment(33 005 0)

General Equipment

Worldwide Diagnostic System (WDS) (418-F224)
--

NOTE: This procedure is used when a customer needs keys programmed into the system or after keys have been erased using diagnostic equipment.

NOTE: During this procedure it will be necessary to utilize the Anti-Theft System (PATS) Security Access Procedure. PATS security access must be granted to erase or program ignition keys. The anti-theft security access procedure requires access to the GSEVIN database in order to obtain the coded security access.

NOTE: This procedure will not erase programmed ignition keys from the passive anti-theft alarm system (PATS) memory.

NOTE: A maximum of eight ignition keys can be programmed to a passive anti-theft system (PATS) equipped vehicle.

1. Insert an ignition key into the ignition lock cylinder and turn the ignition key from the 0 position to the II position.
2. From the diagnostic tool menu Select: **Body/Security/PATS** Functions. Follow the instructions on the screen.
3. From the diagnostic tool menu Select: Ignition Key Programming. Follow the instructions on the screen.

GENERAL PROCEDURES

Key Programming Switch State Control

General Equipment

Worldwide Diagnostic System (WDS) (418-F224)

NOTE: The spare key programming switch is a programmable switch which provides the capability to enable or disable the normal customer spare key programming procedure detailed in the Owner's Manual. This programmable switch is provided as a convenience for rental company fleets or other fleet purchasers who may not want the spare key programming procedure available to the vehicle driver.

NOTE: During this procedure it will be necessary to utilize the Anti-Theft System (PATS) Security Access Procedure. PATS security access must be granted to erase or program ignition keys or to enable or disable the ignition key programming switch state control. The anti-theft security access procedure requires access to the **GSEVIN** database in order to obtain the coded security access.

1. Insert a programmed ignition key into the ignition lock cylinder and turn the ignition key from the **0** position to the **II** position.
2. From the diagnostic tool menu Select:
Body/Security/PATS Functions Follow the instructions on the screen.
3. From the diagnostic tool menu Select:
Enable Fleet or Hire vehicle mode or Disable Fleet or Hire vehicle mode. Follow the instructions on the screen.

GENERAL PROCEDURES**Erasing All Key Codes Using Diagnostic Equipment****General Equipment**

Worldwide Diagnostic System (WDS) (418-F224)
--

NOTE: This procedure is used when a customer needs ignition keys programmed into the system. This procedure is also useful when programmed ignition key(s) have been lost or when the ignition lock cylinder has been replaced or when it is necessary to erase a key(s) from the passive anti-theft alarm system (PATS) memory.

NOTE: During this procedure it will be necessary to utilize the Anti-Theft System (PATS) Security Access Procedure. PATS security access must be granted to erase or program ignition keys. The anti-theft security access procedure requires access to the GSEVIN database in order to obtain the coded security access.

NOTE: This procedure will erase all programmed ignition keys from the passive anti-theft alarm system (PATS) memory and the engine will not start until two keys have been reprogrammed to the system.

For additional information, refer to Key Programming Using Diagnostic Equipment - in this section.

NOTE: Two PATS encoded keys with the correct mechanical cut must be available to carry out this procedure. One or both of them may be the original keys.

NOTE: If the remaining keys are with the customer and are not available with the vehicle, instruct the customer that the remaining keys are no longer valid to start the vehicle. If the customer wants to have these keys to be valid for the vehicle, the keys must be programmed using WDS.

For additional information, refer to Key Programming Using Diagnostic Equipment - in this section.

1. Turn the ignition lock cylinder from the 0 position to the II position.
2. From the diagnostic tool menu Select: **Body/Security/PATS Functions** from the menu. Follow the instructions on the screen.
3. From the diagnostic tool menu Select: **Ignition Key Erase**. Follow the instructions on the screen.
4. From the diagnostic tool menu Select: **Ignition Key Programming**. Follow the instructions on the screen.

GENERAL PROCEDURES**Anti-Theft Security Access(33 004 0)****General Equipment**

Worldwide Diagnostic System (WDS) (418-F224)
--

NOTE:Anti-Theft System (PATS) security access must be granted to erase or program ignition keys or to enable or disable the ignition key programming switch state control. The anti-theft security access procedure requires access to the GSEVIN database in order to obtain the coded security access.

NOTE:When installing a new powertrain control module (PCM), the following sequence must be completed:

- 1. Ignition Key Programming.
- 2. Module Initialization.

NOTE:When installing a new instrument cluster, the following must be completed:

- 1. Module Initialization.

1. Insert an ignition key into the ignition lock cylinder and turn the ignition key from the 0 position to the II position.
2. From the diagnostic tool menu Select: **Body/Security/PATS Functions. Follow the instructions on the screen.**

SECTION 419-08 Cellular Phone

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
DIAGNOSIS AND TESTING	
Cellular Phone.....	419-08-2
Inspection and Verification.....	419-08-2
Symptom Chart.....	419-08-2
Pinpoint Test.....	419-08-4

DIAGNOSIS AND TESTING

Cellular Phone

Refer to Wiring Diagrams Section 419-08, for schematic and connector information.

Inspection and Verification

1. Verify the customers concern.
2. Visually inspect for obvious signs of electrical damage.

Visual Inspection Chart

Electrical
- Fuse(s)
- Wiring Harness
- Electrical connector(s)
- Microphone
- Cellular phone antenna

Electrical
- Cellular phone speaker
- Handset holder
- Cellular phone
- Portable Support Electronics (PSE) Module

3. Verify that the cellular phone operates correctly out of the vehicle before proceeding to the next step.
4. Verify the audio unit or navigation system display module is working correctly before proceeding to the next step.
5. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
6. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Symptom	Possible Sources	Action
• The handset battery does not charge	• Circuit(s). • Handset holder. • Cellular phone. • PSE Module.	• GO to Pinpoint Test A.
• Interference from the cellular phone speaker - vehicles with Traffic Pro navigation system	• Incorrect settings of the navigation system display module.	• MAKE sure that MUTE is selected in the navigation system display module RADIO MODE. TEST the system for normal operation.
• Reduced sound or no sound through the speaker	• Circuit(s). • Cellular phone speaker. • Handset holder. • PSE Module.	• GO to Pinpoint Test B.
• No SVC display stays on	• Cellular phone antenna. • Handset holder.	• GO to Pinpoint Test C.
• The hands-free system is inoperative - vehicles built up to 1012005	• Cellular phone and handset holder electrical contacts.	• CHECK the cellular phone is correctly installed into the handset holder. TEST the system for normal operation.
• The hands-free system is inoperative - vehicles built 1012005 onwards	• Circuit(s). • Microphone. • PSE Module.	• GO to Pinpoint Test D.
	• MS CAN bus.	• REFER to WDS.

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
<ul style="list-style-type: none"> Microphone sensitivity too low (user is difficult to hear when making calls) 	<ul style="list-style-type: none"> Microphone incorrectly adjusted. 	<ul style="list-style-type: none"> INCREASE the microphone sensitivity on the PSE module during a conversation.
	<ul style="list-style-type: none"> Microphone location incorrect. 	<ul style="list-style-type: none"> CHECK the location of the microphone. INSTALL the microphone in the correct location if necessary.
Microphone sensitivity too high (user hears their own voice when making calls)	<ul style="list-style-type: none"> Microphone incorrectly adjusted. 	<ul style="list-style-type: none"> DECREASE the microphone sensitivity on the PSE module during a conversation.
<ul style="list-style-type: none"> Whistling noise when the cellular phone is in use 	<ul style="list-style-type: none"> Microphone incorrectly adjusted. 	<ul style="list-style-type: none"> DECREASE the microphone sensitivity on the PSE module during a conversation.
<ul style="list-style-type: none"> The cellular phone speaker operates but the audio unit speakers do not mute. 	<ul style="list-style-type: none"> PSE module wiring harness. Electrical connection to the audio unit or navigation system display module. Threshold voltage to the audio unit or navigation system display module is not achieved. 	<ul style="list-style-type: none"> INSTALL a new PSE module wiring harness. TEST the system for normal operation. If the concern persists, INSTALL a new PSE module. TEST the system for normal operation.
	<ul style="list-style-type: none"> Audio unit or navigation system display module. 	<ul style="list-style-type: none"> INSTALL a new audio unit. REFER to: Audio Unit - Vehicles Built Up To: 1012005 (415-01 Audio Unit, Removal and Installation) / Audio Unit - Vehicles Built From: 1012005 (415-01 Audio Unit, Removal and Installation). INSTALL a new navigation system display module. Vehicles with Travel Pilot, REFER to: Navigation System Display Module (419-07 Navigation System - Vehicles With: Travel Pilot, Removal and Installation). Vehicles with Traffic Pro, REFER to: Navigation System Display Module (419-07 Navigation System - Vehicles With: Traffic Pro, Removal and Installation).

DIAGNOSIS AND TESTING

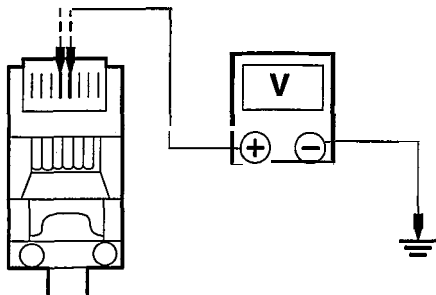
Pinpoint Test

PINPOINT TEST A : THE HANDSET BATTERY DOES NOT POWER UP

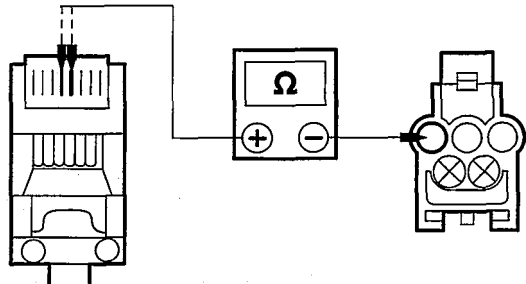
TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

A1: CHECK THE POWER SUPPLY TO THE PSE MODULE

	<input type="checkbox"/> Disconnect PSE Module C1026. 2 Ignition switch in position I.
 <p>VUE0027516</p>	3 Measure the voltage between the PSE module C1026 pin 4, (PK), harness side and ground; and the PSE module C1026 pin 5, (GY), harness side and ground. <ul style="list-style-type: none"> Is the voltage greater than 10 volts? → Yes GO to A3. → No GO to A2.

A2: CHECK THE PSE MODULE POWER WIRING HARNESS FOR OPEN CIRCUIT

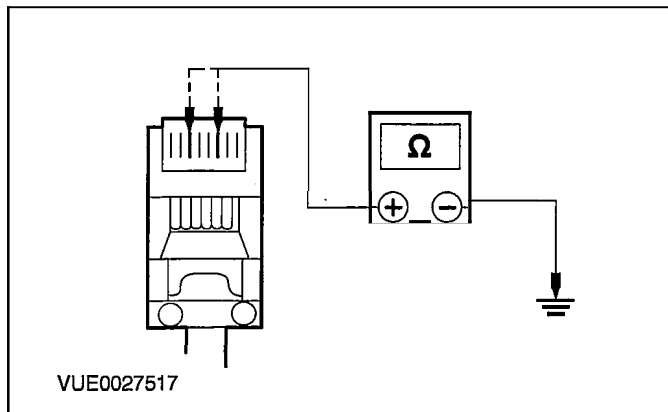
	1 Disconnect PSE Harness C1025.
 <p>VUE0034476</p>	2 Measure the resistance between the PSE module C1026 pin 4, (PK), harness side and PSE harness C1025 pin 1, (YE), harness side; and the PSE module C1026 pin 5, (GY), harness side and PSE harness C1025 pin 1, (YE), harness side. <ul style="list-style-type: none"> Is the resistances less than 5 ohms? → Yes For audio unit, GO to A5. For navigation display module, GO to A6. → No REPAIR the circuit. TEST the system for normal operation.

A3: CHECK THE PSE MODULE FOR GROUND

	<input type="checkbox"/> Connect PSE Harness C1025.
	2 Ignition switch in position 0.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

Measure the resistance between the PSE module C1026 pin 3, (BN), harness side and ground; and the PSE module C1026 pin 6, (YE), harness side and ground.

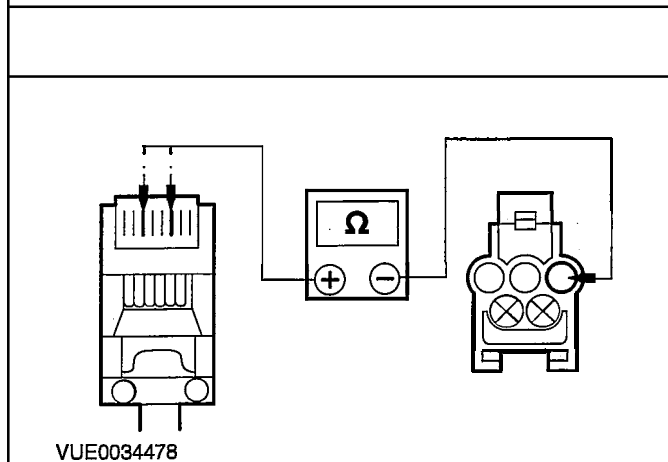
- Is the resistance less than 5 ohms?

→ **Yes**

CLEAN the handset holder and cellular phone electrical connectors. TEST the system for normal operation. If the concern persists, INSTALL a new handset holder. TEST the system for normal operation. If the concern persists, INSTALL a new PSE module.

→ **No**

GO to A4.

A4: CHECK THE PSE MODULE GROUND WIRING HARNESS FOR OPEN CIRCUIT

- ☐ Disconnect PSE Harness C1025.

- 2** Measure the resistance between the PSE module C1026 pin 3, (BN), harness side and PSE harness C1025 pin 3, (YE), harness side; and the PSE module C1026 pin 6, (YE), harness side and PSE harness C1025 pin 3, (YE), harness side.

- Is the resistances less than 5 ohms?

→ **Yes**

For audio unit, GO to A7.

For navigation display module, GO to A8.

→ **No**

INSTALL a new PSE module wiring harness. TEST the system for normal operation.

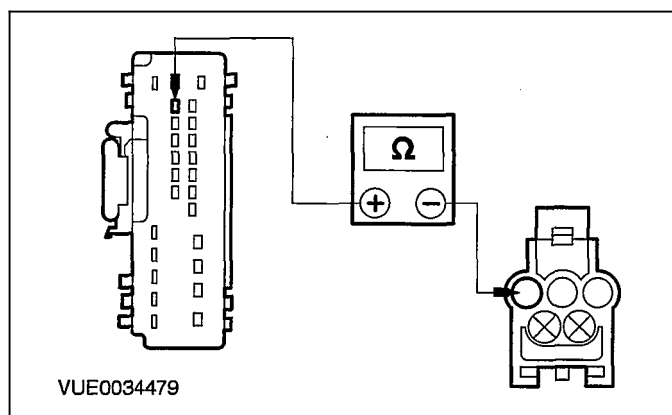
A5: CHECK THE PSE MODULE POWER WIRING HARNESS TO AUDIO UNIT WIRING HARNESS FOR OPEN CIRCUIT

- Disconnect Audio Unit C344.

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS RESULTS ACTIONS



- ☐ Measure the resistance between the PSE module C1025 pin 1, (YE), harness side and audio unit C344 pin 2, circuit 75-MD15 (YE/GN), harness side.

- Is the resistance less than 5 ohms?

→ **Yes**

For additional information.

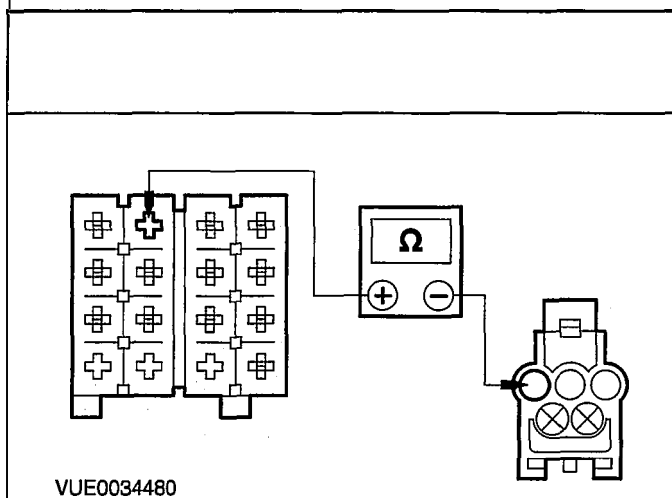
REFER to: Audio System - Vehicles Built Up To: 1012005 (415-00 Information and Entertainment System - General Information, Diagnosis and Testing)

/ Audio System - Vehicles Built From: 1012005 (415-00 Information and Entertainment System - General Information, Diagnosis and Testing).

→ **No**

REPAIR the circuit. TEST the system for normal operation.

A6: CHECK THE PSE MODULE POWER WIRING HARNESS TO NAVIGATION SYSTEM DISPLAY MODULE WIRING HARNESS FOR OPEN CIRCUIT



- ☐ Disconnect Navigation System Display Module C717.

- ☐ Measure the resistance between the PSE module C1025 pin 1, (YE), harness side and navigation system display module C717 pin 7, circuit 75-MD15 (YE/GN), harness side.

- Is the resistance less than 5 ohms?

→ **Yes**

For additional information, for vehicles with Travel Pilot

REFER to: Navigation System (419-07 Navigation System - Vehicles With: Travel Pilot, Diagnosis and Testing).

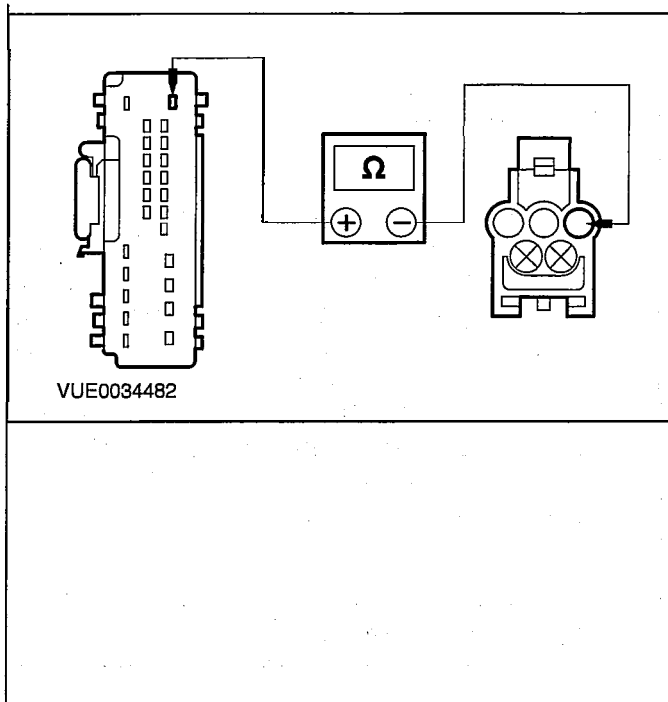
for vehicles with Traffic Pro, REFER to: Navigation System (419-07 Navigation System - Vehicles With: Traffic Pro, Diagnosis and Testing).

→ **No**

REPAIR the circuit. TEST the system for normal operation.

A7: CHECK THE PSE MODULE GROUND WIRING HARNESS TO AUDIO UNIT WIRING HARNESS FOR OPEN CIRCUIT

- ☐ Disconnect Audio Unit C344.

DIAGNOSIS AND TESTING**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS**

- ☐ Measure the resistance between the PSE module C1025 pin 3, (BN), harness side and audio unit C344 pin 13, circuit 91-MD15 (BWGN), harness side.

• Is the resistance less than 5 ohms?

→ **Yes**

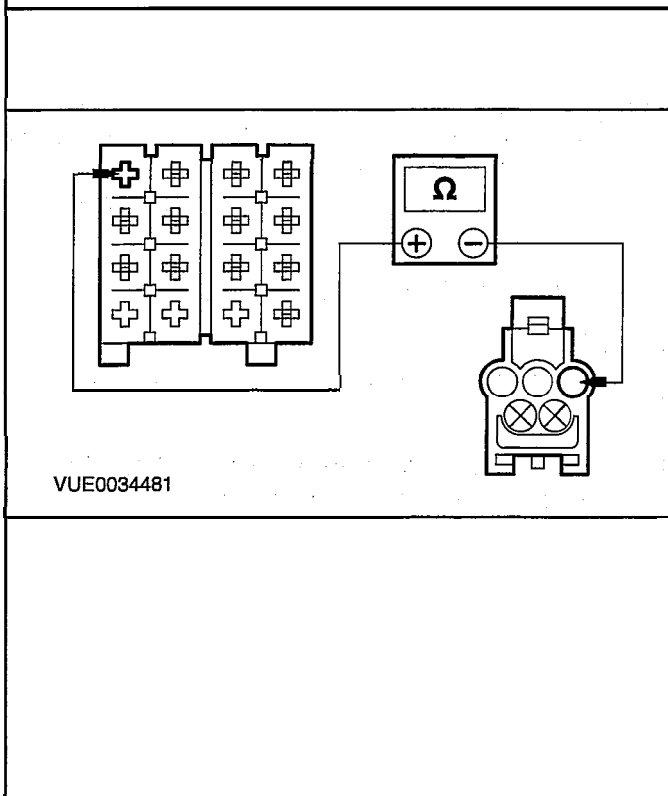
For additional information,

REFER to: Audio System - Vehicles Built Up To: 1012005 (415-00 Information and Entertainment System - General Information, Diagnosis and Testing)

/ Audio System - Vehicles Built From: 1012005 (415-00 Information and Entertainment System - General Information, Diagnosis and Testing).

→ **No**

REPAIR the circuit. TEST the system for normal operation.

A8: CHECK THE PSE MODULE GROUND WIRING HARNESS TO NAVIGATION SYSTEM DISPLAY MODULE WIRING HARNESS FOR OPEN CIRCUIT

- 1** Disconnect Navigation System Display Module C717.

- 2** Measure the resistance between the PSE module C1025 pin 3, (BN), harness side and navigation system display module C717 pin 8, circuit 91-MD15 (BWGN), harness side.

• Is the resistance less than 5 ohms?

→ **Yes**

For additional information, for vehicles with Travel Pilot

REFER to: Navigation System (419-07 Navigation System - Vehicles With: Travel Pilot, Diagnosis and Testing).

for vehicles with Traffic Pro, REFER to: Navigation System (419-07 Navigation System - Vehicles With: Traffic Pro, Diagnosis and Testing).

→ **No**

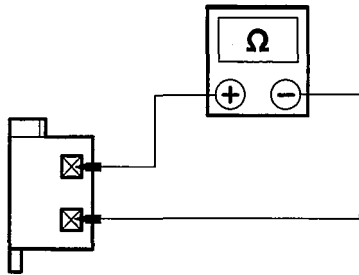
REPAIR the circuit. TEST the system for normal operation.

PINPOINT TEST B : REDUCED SOUND OR NO SOUND THROUGH THE SPEAKER**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS****B1: CHECK THE CELLULAR PHONE SPEAKER**

- 1** Disconnect Cellular Phone Speaker.

DIAGNOSIS AND TESTING

TEST CONDITIONS



VUE0032779

DETAILS/RESULTS/ACTIONS

- ☐ Measure the resistance between the speaker terminals (component side).

- Is the resistance between 3 and 5 ohms?

→ **Yes**

REPAIR if necessary the circuit between the cellular phone speaker and the PSE module. TEST the system for normal operation. If the concern persists, CLEAN the handset holder and cellular phone electrical connectors. TEST the system for normal operation. INSTALL a new handset holder. TEST the system for normal operation. If the concern persists, INSTALL a new PSE module. TEST the system for normal operation.

→ **No**

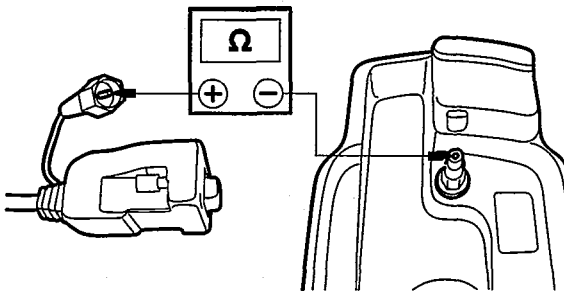
INSTALL a new cellular phone speaker. TEST the system for normal operation.

PINPOINT TEST C : NO SVC DISPLAY STAYS ON

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

C1: CHECK THE HANDSET HOLDER ANTENNA CABLE FOR OPEN CIRCUIT



VUE0027521

- 1 Disconnect Handset Holder Antenna Cable.

- 2 Measure the resistance between the center pin of the cellular phone handset holder antenna connection and the center pin of the antenna cable connector.

- Is the resistance less than 1 ohm?

→ **Yes**

TEST the system for normal operation.

→ **No**

INSTALL a new handset holder. TEST the system for normal operation.

PINPOINT TEST D : THE HANDS-FREE SYSTEM IS INOPERATIVE - VEHICLES BUILT 10/2005 ONWARDS

TEST CONDITIONS

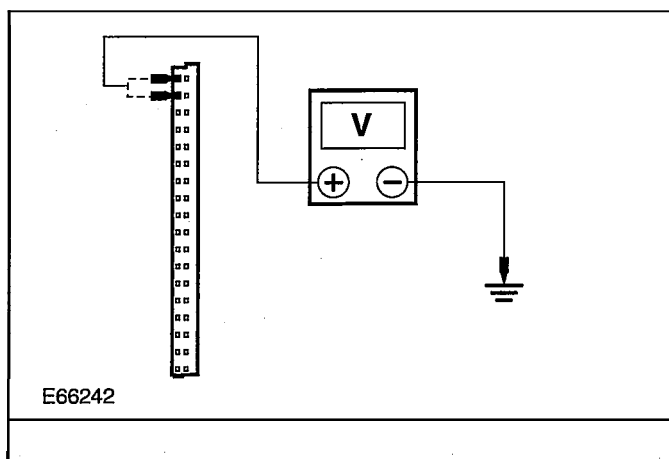
DETAILS/RESULTS/ACTIONS

D1: CHECK THE PSE MODULE CIRCUIT FOR POWER

- 1 Disconnect PSE Module C796.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the voltage between the PSE module C796 pin 17, circuit 29-MC12A (OGNE) and between the PSE module C796 pin 18, circuit 29-MC12 (OGNE), harness side and ground.

• Are the voltages greater than 10 volts?

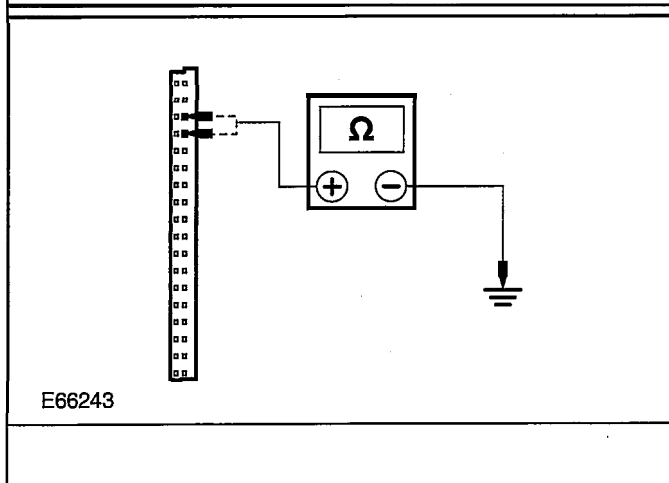
→ **Yes**

GO to D2.

→ **No**

REPAIR circuit 29-MC12A (OGNE) or circuit 29-MC12 (OGNE). TEST the system for normal operation.

D2: CHECK THE PSE MODULE CIRCUIT FOR GROUND



- Measure the resistance between the PSE module C796 pin 33, circuit 91-MC12A (BKNE), harness side and ground, and between the PSE module C796 pin 34, circuit 91-MC12 (BKNE), harness side and ground.

• Are the resistances less than 5 ohms?

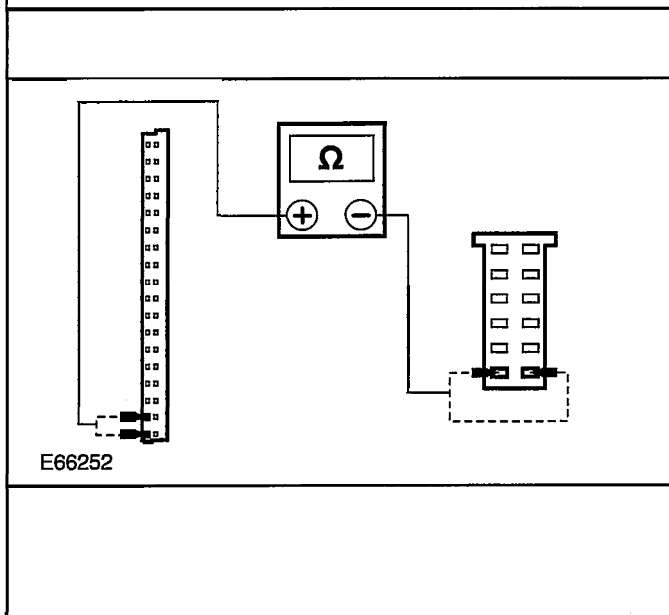
→ **Yes**

GO to D3.

→ **No**

REPAIR circuit 91-MC12A (BKNE) or circuit 91-MC12 (BKNE). TEST the system for normal operation.

D3: CHECK CIRCUIT 8-MC12 (WH) AND CIRCUIT 9-MC12 (BN) FOR OPEN CIRCUIT



- 1 Disconnect Audio Unit C777.

- 2 Measure the resistances between:
- the PSE module C796 pin 1, circuit 8-MC12 (WH), harness side and the audio unit C777 pin 1, circuit 8-MC12 (WH), harness side.
 - the PSE module C796 pin 2, circuit 9-MC12 (BN), harness side and the audio unit C777 pin 7, circuit 9-MC12 (BN), harness side.

• Are the resistances less than 5 ohms?

→ **Yes**

GO to D4.

→ **No**

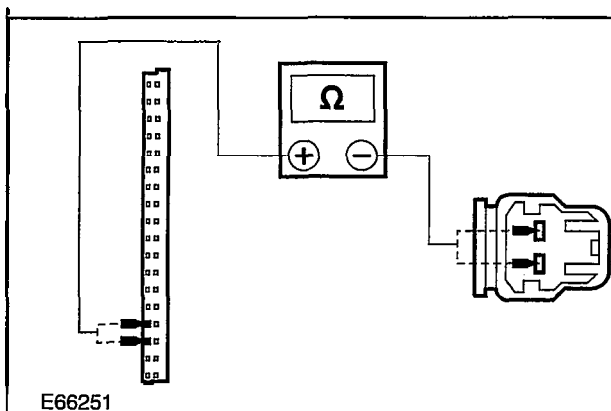
REPAIR circuit 8-MC12 (WH) or circuit 9-MC12 (BN). TEST the system for normal operation.

D4: CHECK THE MICROPHONE CIRCUITS FOR OPEN CIRCUIT

- 1 Disconnect Microphone C798.

DIAGNOSIS AND TESTING

TEST CONDITIONS



DETAILS/RESULTS/ACTIONS

- 2 Measure the resistances between:
- the PSE module C796 pin 3, circuit 8-MC8 (WHIRD), harness side and the microphone C798 pin 1, circuit 8-MC8 (WHIRD), harness side.
 - the PSE module C796 pin 4, circuit 48-MC8A (BK), harness side and the microphone C798 pin 2, circuit 48-MC8B (BK), harness side.
- Are the resistances less than 5 ohms?
- **Yes**
INSTALL a new microphone. TEST the system for normal operation. If the concern persists, INSTALL a new PSE module. TEST the system for normal operation.
- **No**
REPAIR circuit 8-MC8 (WHIRD) or circuit 48-MC8A (BK). TEST the system for normal operation.

SECTION 419-10 Multifunction Electronic Modules

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

DESCRIPTION AND OPERATION

Module Controlled Functions.....	419-10-3
Generic Electronic Module (GEM).....	419-10-3
GEM - vehicles built from 0812005.....	419-10-4
Headlamp switch-off delay - vehicles built from 0812005.....	419-10-6
Peripheral lights - vehicles built from 0812005.....	419-10-6
Autolamps - vehicles built from 0812005.....	419-10-7
Combined rain sensor/light sensor - vehicles built from 0812005.....	419-10-7
Turn signals.....	419-10-7
Lane-change flasher - vehicles built from 0812005.....	419-10-8
Interior lighting.....	419-10-8
Heated windshield.....	419-10-9
Rear window heating.....	419-10-9
Windshield wash/wipe functions.....	419-10-9
Windshield wash/wipe function.....	419-10-9
Automatic windshield wipers - vehicles built from 0812005.....	419-10-10
Rain sensor operating principle - vehicles built from 0812005.....	419-10-10
Rear window wash/wipe function.....	419-10-11
Rear window wash/wipe function.....	419-10-11
Information/warning functions.....	419-10-11
Message center - vehicles built from 0812005.....	419-10-12
Locking/unlocking - central locking.....	419-10-12
Locking/unlocking - driver's door unlocking system.....	419-10-12
Locking/unlocking - central unlocking.....	419-10-13
Locking/unlocking - automatic central locking.....	419-10-13
Programming of radio remote control operations.....	419-10-13
Anti-theft alarm system.....	419-10-13
Liftgate release.....	419-10-14
Folding exterior mirrors - vehicles built from 0812005.....	419-10-14
Battery protection function.....	419-10-14
Low-power/high-power mode - vehicles built from 0812005.....	419-10-14
Diagnosis.....	419-10-15

DIAGNOSIS AND TESTING

Generic Electronic Module (GEM) — Vehicles Built Up To: 1012005.....	419-10-17
Description of operation.....	419-10-17
Inspection and Checking.....	419-10-17
Defect Identification Table.....	419-10-18
System Check.....	419-10-18
Generic Electronic Module (GEM) — Vehicles Built From: 1012005.....	419-10-24
Description of operation.....	419-10-24
Inspection and Testing.....	419-10-24
Fault Code Table.....	419-10-26
Symptom chart.....	419-10-32
System Check.....	419-10-32

REMOVAL AND INSTALLATION

Generic Electronic Module (GEM).....	419-10-34
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DESCRIPTION AND OPERATION**Module Controlled Functions****Generic Electronic Module (GEM)**

The GEM is an independent control module which controls a series of functions of the body electrics.

It replaces various previously used components, such as the turn signal relay, the Central Timer Module (CTM) and the central locking module.

Four different versions are available depending on the equipment level of the vehicle:

- A - vehicles with manual unlocking
- B - vehicles with central locking
- C - vehicles with central locking and remote control
- D - vehicles with central double locking, anti-theft warning system and remote control

Overview of operation

Functions	B- GEM Ax	B- GEM Bx	B- GEM Cx	B- GEM Dx
Turn signals				
Turn signals and hazard flasher	X	X	X	X
Interior lighting				
On/off	X	X	--	--
Dimmer function	--	--	X	X
Window heating				
Windshield	--	X	X	X
Rear window	X	X	X	X
Wipers				
Windshield wash/wipe function	X	X	X	X
Windshield after-wipe	X	X	X	X
Rear window wipe during reversing	X	X	X	X
Rear window wash/wipe function	X	X	X	X
Information/warning functions				
Door open warning lamp	--	X	X	X
Lights on warning lamp	X	X	X	X
Locking/unlocking				
Manual locking/unlocking with a key	X	X	X	X
Locking/unlocking via central locking system	--	X	X	X
Remote control				
Locking/unlocking with remote control	--	--	X	X
Double locking	--	--	--	X
Programming of remote control operations	--	--	X	X
Alarm				
Anti-theft alarm system	--	--	--	X
Liftgate release				

DESCRIPTION AND OPERATION

Functions	B- GEM Ax	B- GEM Bx	B- GEM Cx	B- GEM Dx
Release via switch in the passenger compartment	--	X	X	X
Release via remote control	--	--	X	X
Other functions				
Battery protection function	X	X	X	X
Diagnosis				
Diagnosis	X	X	X	X
Service mode	X	X	X	X

GEM - vehicles built from 0812005

The GEM is an independent control module which controls a series of functions of the body electrics.

Four different versions are available depending on the equipment level of the vehicle:

- A - Vehicles with manual central locking system
- B - Vehicles with central locking system and radio remote control

- C - Vehicles with central/double locking, anti-theft alarm system and radio remote control
- D - Vehicles with central locking and radio remote control (with different remote control frequency for the Japanese market)

Overview of operation

Versions	B- GEM Ax	B- GEM Bx	B- GEM Cx	B- GEM Cx	B- GEM Dx
Functions	CL	CURF	DURF	ST150 (RHD)	Japan
Voltage supply					
Battery protection function	X	X	X	X	X
Voltage supply management	X	X	X	X	X
Exterior lighting					
Turn signals and hazard flasher	X	X	X	X	X
Lane-change flasher	X	X	X	X	X
Hazard flasher during sharp braking	X	X	X	X	X
Headlamp switch-off delay	X	X	X	X	X
Peripheral lights	--	X	X	X	X
Autolamps	--	X	X	X	X
Interior lighting					
Interior lamp switch-off delay	X	X	X	X	X
Interior lamp extended switch-off delay	X	X	X	X	X
Activated when doors are unlocked	--	X	X	X	X
Window heating					
Windshield	X	X	X	X	X

DESCRIPTION AND OPERATION

Versions	B- GEM Ax	B- GEM Bx	B- GEM Cx	B- GEM Cx	B- GEM Dx
Functions	CL	CURF	DURF	ST150 (RHD)	Japan
Rear window	X	X	X	X	X
Wipers					
Programmable windshield wiper interval	X	X	X	X	X
Windshield wiper interval adjustable via rotary switch	X	X	X	X	X
Rain sensor	--	X	X	X	X
Windshield washwipe function	X	X	X	X	X
Windshield after-wipe	X	X	X	X	X
Rear window intermittent wipe	X	X	X	X	X
Rear window washwipe function	X	X	X	X	X
Rear window wipe during reversing	X	X	X	X	X
Folding exterior mirrors					
Exterior mirror folding function via locking/unlocking		X	X	X	X
Information/warning functions					
Door open warning indicator	X	X	X	X	X
Lights on warning buzzer	X	X	X	X	X
Personalization	X	X	X	X	X
Locking/unlocking					
Manual locking/unlocking with a key	X	X	X	X	X
Central locking/unlocking with 433MHz radio remote control	--	X	--	--	--
Central locking/unlocking with 315MHz radio remote control	--	--	--	--	X
Central locking/unlocking and double locking with 433MHz radio remote control	--	--	X	X	--
Two-stage unlocking (driver door/all doors)	--	X	X	X	X
Locking status feedback via turn signals	X	X	X	X	X
Programming of double locking/single locking	--	--	X	--	--
Vehicle locking at start of trip (not for European markets)	X	X	X	X	X
Liftgate release					
Release via radio remote control	--	X	X	X	X
Release via switch in the passenger compartment	X	X	X	X	X
Alarm					
Anti-theft alarm system (perimeter)	--	--	X	--	--

DESCRIPTION AND OPERATION

Versions	B-GEM Ax	B- GEM Bx	B-GEM Cx	B-GEM Cx	B- GEM Dx
Functions	CL	CURF	DURF	ST150 (RHD)	Japan
Anti-theft alarm system (Thatcham CatI)	--	--	--	X	--
Radio/DVD input signal for alarm system	--	--	X	X	--
Interior scanning	--	--	X	X	--
Deactivation of the anti-theft alarm system with valid PATS key	--	--	--	X	--
Anti-theft alarm horn with integral battery	--	--	--	X	--
Horns					
Vehicle horn	X	X	X	X	X
Alarm horn	--	--	X	--	--
Diagnosis					
Diagnosis	X	X	X	X	X
Service mode	X	X	X	X	X
Programming of PATS key	--	X	X	X	X

Headlamp switch-off delay - vehicles built from 0812005

The headlamp switch-off delay utilizes the low beam together with the peripheral lights (if equipped) to illuminate the area surrounding the vehicle. The function is activated by turning the light switch to the "headlamps" position with the ignition switch in the "O" position.

On vehicles with "autolamps", the function is activated by turning the light switch to the "Auto" position with the ignition switch in the "O" position.

After the last door has been closed, the function remains active for a further 30 seconds and then switches off automatically.

When a door or the **liftgate** is open, the switch-off time is extended to 180 seconds. After the last door has been closed, the switch-off time is reset to 30 seconds.

The headlamp switch-off delay can be deactivated by operating the high beam switch again or by switching on the ignition prematurely.

Peripheral lights - vehicles built from 0812005

The lamps used for the peripheral lights are the front side lamps, rear lamps and license plate lamps.

The peripheral lights are switched on when a door or the **liftgate** are opened or an unlock command is detected and the following conditions are fulfilled:

- The ignition key is in position "0" or "I".
- Reverse gear is not engaged.
- The vehicle speed is below 7 km/h.

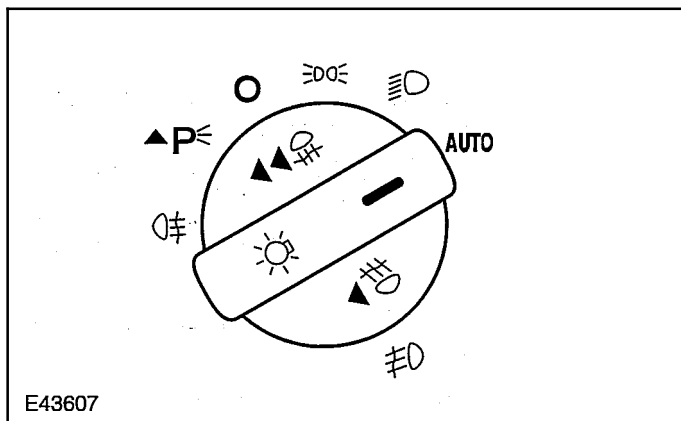
The peripheral lights are switched off when one of the following conditions is fulfilled:

- The ignition switch is turned to position "II" or "III".
- Reverse gear is engaged.
- The vehicle speed exceeds 7 km/h.
- More than 25 seconds have elapsed since the **liftgate** was closed or a central locking command was determined.
- The time set for the battery protection function for the interior lighting has elapsed.

DESCRIPTION AND OPERATION

- More than 5 seconds have elapsed since the doors and the liftgate were closed.
- More than 5 seconds have elapsed since a central locking command was received and all the doors and the liftgate were closed.

Autolamps-vehicles built from 0812005

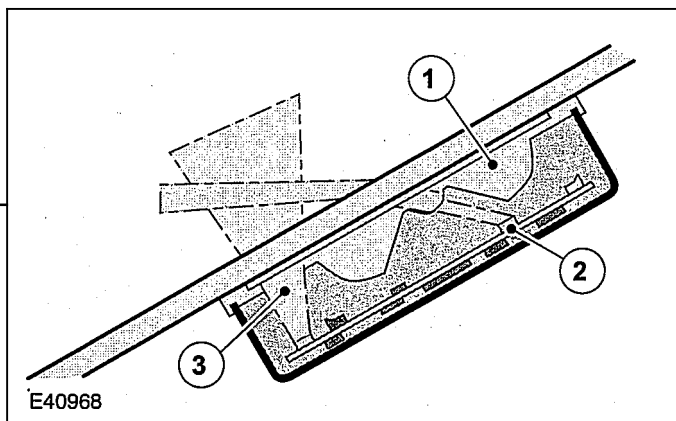


The dipped beam headlamps and side lights are switched on automatically if all the following conditions are satisfied:

- Ignition switch in the "II" or "III" position
- Light switch in the "AUTO" position
- Determined ambient light conditions below a stored threshold value

The low beams and the side lights are switched on or off by the GEM according to the input signals of the combined rain sensor/light sensor. This takes place in the GEM by activating the low beam relay and the autolamp relay (side lamps/license plate lamps).

Combined rain sensor/light sensor - vehicles built from 0812005



Item	Description
1	Lens
2	Front light sensor
3	Ambient light sensor

The combined rain sensor/light sensor is attached to the windshield, near the interior rear view mirror.

The ambient light sensor determines the general light intensity. For this purpose, it detects the light over as wide an angle as possible, without taking the direction of incidence into account.

The front light sensor determines the light intensity directly in front of the vehicle.

If both the ambient light sensor and the front light sensor detect a sudden reduction in light intensity at the same time, then an algorithm-based calculation is used to determine the fact that the vehicle has entered a tunnel, a multi-storey car park or a long underpass.

In this case the request for switching on the external lighting and the indicator in the instrument cluster is transmitted to the GEM.

If the vehicle enters into the shade thrown by a large truck, the two sensors will register different light intensities. In this case, the algorithm-based calculation will not result in the lights being switched on.

Turn signals

The GEM actuates the turn signal lamps for direction indication and the hazard flasher. It therefore replaces the conventional turn signal relay.

DESCRIPTION AND OPERATION

For the turn signal, the turn signal lamps at the front, rear and on the side of the vehicle, as well as the indicator in the instrument cluster are activated according to the position of the turn signal switch at approx. 80 impulses per minute.

An audible sound is generated with the same rhythm by a sound generator in the instrument cluster as an audible check for the driver.

If one of the turn signal lamp bulbs fails then the flashing frequency is increased to around 160 impulses per minute. On vehicles with message center in the instrument cluster, a message is generated.

The turn signal lamps are also used for the following signals:

- Confirmation of locking/unlocking and alarm activation (central locking/anti-theft alarm system)
- Alarm triggered (anti-theft alarm system)
- Confirmation of reprogramming (radio remote control)

As these signals could overlap in certain situations, a priority level has been assigned to each one.

- Priority 1: hazard signal
- Priority 2: alarm triggered
- Priority 3: turn signal
- Priority 4: confirmation of locking/activation of alarm
- Priority 5: confirmation of reprogramming

Lane-change flasher - vehicles built from 08/2005

With the lane-change flasher, the turn signals flash in a three-flash mode. For this purpose, the turn signal lamp switch is turned to the first non-engaged position and released again within 0.1 to 0.7 seconds. If the turn signal lamp switch is held in this first position for less than 0.1 seconds or longer than 0.7 seconds, the turn signal system responds in single-flash mode for as long as the turn signal switch is held or remains in the engaged position. The three-flash mode can be configured via Worldwide Diagnostic System (WDS) or the instrument cluster personalization menu.

Interior lighting

Depending on the model and the equipment level of the vehicle, the interior lighting controlled by the GEM includes the overhead light at the front and rear and the luggage compartment light.

The overhead lamps are only switched by the GEM if the corresponding lamp has been set to "Door operation" (not if the light is in the "Continuous" or "OW" settings).

The lamps are switched on as soon as one of the following conditions is satisfied:

- A door or the liftgate has been opened (switch in the door/liftgate lock).
- The ignition lock is in position "0" or "I" and the vehicle is unlocked centrally.
- The ignition lock is turned from position "II" to position "I" or "0"

NOTE: On vehicles built up to 0812005 with Ax GEM, there are no switches in the locks of the rear doors. As a result the overhead lights are not switched on when the rear doors are opened.

NOTE: On vehicles built from 0812005 with Ax GEM and manual locking/unlocking with a key, there are no switches in the locks of the rear doors. Vehicles with central locking/unlocking with remote radio control are equipped with switches in the locks of the rear doors.

The lights are switched off when all the doors and the liftgate are closed and one of the following conditions is satisfied:

- 25 seconds after the lights are switched on or after closing the last door on non centrally locked vehicles
- On closing the last door on centrally locked vehicles
- The ignition lock is turned from position "0" or "I" to position "II"
- Ignition lock in position "0" or "I" while the vehicle is being locked

On vehicles built up to 0812005, dimming is used when switching on and off in the case of the Cx and Dx GEM versions.

On vehicles built from 0812005, dimming is used when switching on and off in the case of the Ax, Bx, Cx and Dx GEM versions.

When the lights are switched on, their operating voltage is brought from OV to operating voltage within a period of 0.7 seconds.

DESCRIPTION AND OPERATION

When the lights are switched off, the operating voltage is continuously reduced to 0V within a period of 1.7 seconds.

The dimmer function is not utilised if the lights are switched off by the battery protection function.

Heated windshield

The heated windshield can only be switched on if the engine is running.

The GEM switches on the relay for the heated windshield in response to a request from the switch in the instrument panel.

On vehicles built from 0812005, the GEM also switches on the relay for the heated windshield in response to a request from the "Max Defrost" button on the Electronic Automatic Temperature Control (EATC) climate control assembly.

The Light Emitting Diode (LED) in the corresponding switch lights up continuously while the windshield is being heated.

The GEM switches the relay off when

- four minutes have passed since switching on
- the switch in the instrument panel is pressed again
- the engine is switched off

Rear window heating

The rear window heating can only be switched on with the ignition key in position "II".

The GEM switches on the relay for the heated rear window in response to a request from the switch in the instrument panel.

On vehicles built from 0812005, the GEM also switches on the relay for the heated rear window in response to a request from the "Max Defrost" button on the EATC climate control assembly.

The LED in the switch lights up continuously while the rear window is being heated.

NOTE: If the vehicle is equipped with heated exterior mirrors, then these are operated together with the rear window heating.

The GEM switches the relay off when

- 14 minutes have passed since switching on
- the switch in the instrument panel is pressed again
- the ignition key is turned to position "I" or "0"

Windshield wash/wipe functions

NOTE: All the wash/wipe functions are only available if the ignition key is in position "II".

The windshield wiper switch has four settings: Off, Intermittent, Level 1 and Level 2.

On vehicles built from 0812005 with rain sensor, the wiper switch also features an Auto function.

In levels 1 and 2 the wipers run continuously at normal or high speed.

In the intermittent setting a wipe is performed every 7 seconds when the basic setting is selected.

On vehicles built up to 0812005, the interval is continuously adjustable. For this purpose, the wiper switch is set to the intermittent wipe position and then switched back off after the first wipe. After the desired wipe interval has elapsed the switch is again moved to the intermittent wipe position. The intermittent wipe delay time is then stored in the GEM.

The time delay can be adjusted to between 1 and 25 seconds.

When the ignition is switched off the time delay is reset to the basic setting.

On vehicles built from 0812005, the intermittent mode can be adjusted in 6 stages via a rotary switch on the wiper lever.

Windshield wash/wipe function

If the washer switch has been activated with the wiper switch in the "Off" position, the washer pump is switched on first to protect the wiper blades, and then after a short delay the wipers. The wipers then perform 2 or 3 wipes.

The after-wipe function on the windshield ensures that any water remaining on the windshield after washing is wiped away. It is only required if the wipers are switched off or set to intermittent mode.

If the wiper switch is in the "Off" position then an after-wipe operation is performed 4 seconds after the washing process is finished.

When the wipers are in intermittent mode the after-wipe is performed after 6 seconds, but only if the wiper delay time is set to more than 6 seconds. Afterwards the wipers continue in intermittent mode.

If the wipers are in operation at normal or high speed when the washer is activated then they continue to run at this speed.

DESCRIPTION AND OPERATION

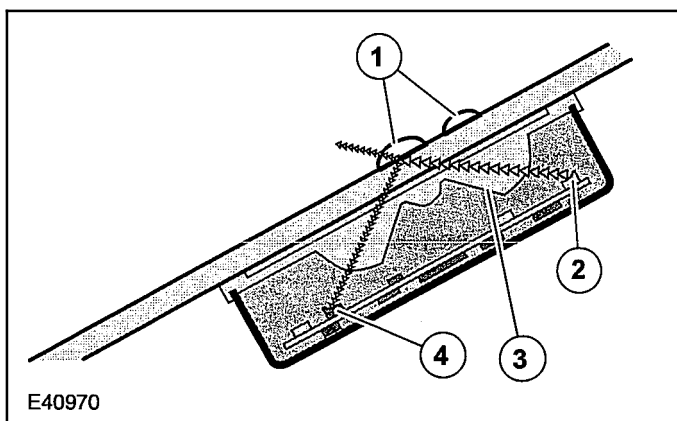
Automatic windshield wipers -vehicles built from 0812005

The rain sensor and the light sensor are integrated into one housing.

The rain sensor consists of an opto-electronic measuring and evaluation circuit. The sensor calculates the amount of precipitation falling on the windshield and request that the windshield wipers are switched on.

On the basis of the information provided by the rain sensor, the windshield wipers are then automatically set to the required wipe speed.

Rain sensor operating principle - vehicles built from 0812005



Item	Description
1	Raindrops
2	LED
3	Lens
4	Photodiode

CAUTIONS:

- ⚠ **The automatic windshield wipers must be switched off before the vehicle is driven into a car wash.**
- ⚠ **If the windshield is iced up, the wipers may only be activated by the rain sensor after the windshield has been completely defrosted.**

NOTE: The rain sensor is an optical measuring instrument. Contamination such as oil, grease or dust impair its correct operation. Before switching on the automatic windshield wipers, the windshield must be clean in the area of the rain sensor.

The rain sensor consists of three components:

- an LED
- a photodiode
- the lens

When the automatic windshield wipers are switched on, the rain sensor is switched on and performs an automatic calibration according to the current conditions on the windshield.

In order to enable this automatic calibration procedure, the windshield wipers perform one wipe during which any moisture is removed from the area of the rain sensor.

Automatic calibration only takes place if the wiper switch was not set to the automatic function before the ignition was switched on.

The LED emits a light beam of known intensity. The emitted beam emerges through the lens and is then **reflected** by the windshield.

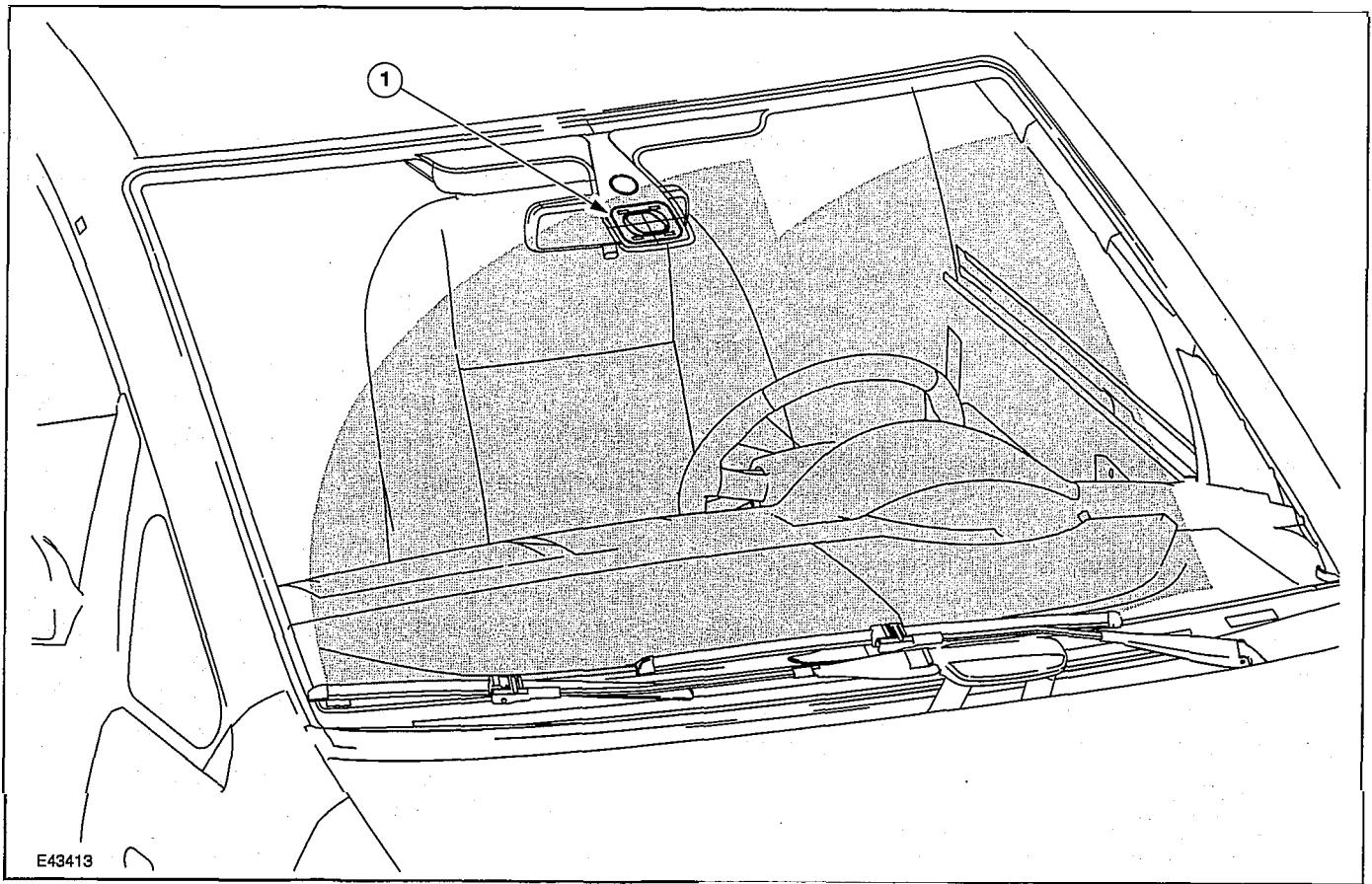
The reflected light beam returns through the lens and reaches the photodiode. The corresponding value taken without moisture on the windshield is used as the reference value for the automatic calibration procedure.

Subsequent deviations from this value cause the windshield wipers to be switched on.

If rain falls on the windshield, the light reflected by the windshield has a lower intensity. This loss of intensity is registered by the photodiode and, proportionally to the loss of intensity, the GEM switches on the windshield wipers at the required wipe speed.

The sensitivity of the rain sensor is set by adjusting the variable resistor at the wiper switch.

- Switch position 1: High sensitivity
 - The wipers wipe even if only a small amount of water has been measured on the windshield.
- Switch position 6: Low sensitivity
 - The wipers only wipe if a large amount of water has been measured on the windshield.

DESCRIPTION AND OPERATION

E43413

Item	Description
1	Installation position of the combined rain/light sensor

Rear window washwipe function

The rear window wiper changes the wiper delay interval according to the setting of the windshield wiper switch.

If the windshield wiper switch is set to Level 2 and the rear window wiper is switched on, then the wiper delay interval is **6** seconds.

If the windshield wiper switch is in the Intermittent or Level 1 position and the rear window wiper is switched on, the wiper delay interval is 10 seconds.

If reverse gear is engaged while the windshield wiper is switched on and the rear window wiper is switched off, then the GEM automatically switches on the rear wiper with the wiper delay interval as described above. This function remains activated until reverse gear is no longer engaged or the windshield wiper is switched off.

Rear window washwipe function

When the switch for the rear window washer is activated the wipers perform wipe operations (while the switch is being activated).

When the switch is released the wipers perform 2-3 more wipes.

Information/warning functions

A warning lamp in the instrument cluster is actuated if at least one door or the liftgate is not fully closed with the ignition lock in position "II".

NOTE: On vehicles built from 0812005, a message is transmitted to the instrument cluster by the GEM via the medium-speed Controller Area Network (CAN) bus in order to generate an acoustic signal.

DESCRIPTION AND OPERATION

An acoustic signal is generated by the GEM if:

- the system changes over to the programming mode for the radio remote control (once).
- in diagnostic mode as entry confirmation (once), as confirmation of input signals (once each) and as exit confirmation when leaving the diagnostic mode (3 times).
- the ignition lock is in position "I" or "0" and the light switch is in position "1" or "2" and the driver's door is opened (continuous "Lights on" warning sound).

Message center - vehicles built from 0812005

Depending on the various model versions, different information is transmitted by the GEM to the message center integrated in the instrument cluster via the medium-speed CAN bus.

The various information can be displayed by pressing a button on the turn signal lamp switch.

▲ WARNING: For reasons of safety, modification of the various functions should only be performed when the vehicle is stationary.

Various functions which are monitored and controlled by the GEM can be modified by means of the button on the turn signal lamp switch.

Modifiable functions

- Confirmation tone (all/minimal)
- Vehicle remote keyless entry (all doors/only driver door)
- Lane-change flasher (3x flashing/1x flashing)
- Hazard flasher during sharp braking (activated/deactivated (only for certain markets))

Locking/unlocking - central locking

Locking/unlocking - central locking

The central locking system locks all doors and the liftgate so that they can no longer be opened from the outside.

The central locking system is activated by turning a key in one of the door lock cylinders to the locking position.

The central locking can also be activated by pressing the internal door openers into the locking position.

If during the central locking process one of the front doors is not fully closed then all the doors are unlocked again.

If during the central locking process one of the rear doors is not fully closed then all the doors are still centrally locked.

Locking/unlocking - double locking

The double locking system locks all doors in such a way that they can neither be opened from the outside nor the inside of the vehicle.

The double locking mechanism is only available if the ignition lock is in the position "0" or "I" and the front doors are fully closed.

To activate the double locking, press the locking button on the radio remote control twice within 3 seconds, or insert the key into one of the door locks and turn it first to the unlocking position and then within 3 seconds to the locking position.

All the turn signal lamps flash twice to confirm activation of the double locking.

If the ignition lock is in the **position** "II" or one of the rear doors is not fully closed then the vehicle is centrally locked but not double locked.

If within 45 seconds of double locking the vehicle the ignition lock is moved to a different position then the system reverts back from double locking to central locking.

If the engine is started after the 45 seconds have elapsed then the double locking remains in force provided the speed of the vehicle does not reach 7 km/h. Once this speed is reached, the system reverts from double locking back to central locking.

Locking/unlocking - driver's door unlocking system

NOTE: The following description only applies if the driver's door unlocking system has been programmed.

If the unlocking button on the radio remote control is only pressed once within 3 seconds, then only the driver's door is unlocked.

If the vehicle was double locked beforehand, then all the other doors switch over to central locking.

If the unlocking button on the radio remote control is pressed twice within 3 seconds then the vehicle is centrally unlocked.

DESCRIPTION AND OPERATION

The driver's door unlocking system can be programmed and cancelled with the aid of the radio remote control.

However, this is only possible if the ignition lock is not in position "II".

Reprogramming is performed by simultaneously pressing the unlocking and locking buttons on the radio remote control for at least 4 seconds. The turn signal lamps flash twice to confirm the reprogramming.

On vehicles built from 0812005, reprogramming can also be performed via the message center integrated in the instrument cluster.

Locking/unlocking - central unlocking

The vehicle is centrally unlocked if:

- one of the door locks is turned with a key to the unlocking position (also applies to double locking)
- the unlocking button on the radio remote control is pressed (also applies to double locking)
- the internal door openers are pulled to the unlocking position (does not apply to double locking)

Locking/unlocking - automatic central locking

The vehicle is centrally locked again automatically after unlocking with the radio remote control if within 45 seconds neither a door or the **liftgate** are opened or the radio remote control is operated.

Programming of radio remote control operations

NOTE: Up to a maximum of four radio remote control operations can be programmed per vehicle.

During the programming process the memory for the known radio remote control operations in the **GEM** is deleted and the existing and new operations are reprogrammed.

To enter the programming mode for the radio remote controls, turn the ignition lock four times from position "0" to position "II" within 6 seconds.

The programming mode is confirmed with an acoustic signal. Afterwards, the corresponding remote control operations can be programmed within 10 seconds.

To start the programming process, press one of the buttons on the remote control.

The **GEM** or the instrument cluster (vehicles built from 0812005) confirms the programming by means of an acoustic signal.

Anti-theft alarm system

The anti-theft alarm system provides a visual and acoustic signal that an unauthorised person is attempting to gain access to the vehicle or that an attempt is being made to turn the ignition key while the anti-theft alarm system is activated.

The system monitors:

- Hood
- Doors
- **Liftgate**
- Ignition lock

In the event of an alarm, the system actuates a separate signal horn (acoustic alarm) for 30 seconds and the hazard flasher (visual alarm) for 5 minutes.

The anti-theft alarm system is activated with a delay of 20 seconds by centrally locking or double locking the vehicle. To do this the ignition lock must be in the position "0".

After the time delay of 20 seconds the hood, all doors and the **liftgate** are alarmed, provided they are fully closed.

If the hood, one of the doors or the **liftgate** are not fully closed then they can be opened without triggering an alarm. If they are then closed, the same time delay of 20 seconds applies before they are alarmed.

The anti-theft alarm system can be switched off by centrally unlocking the vehicle either at the lock or one of the doors or with the remote control.

If the **liftgate** is opened manually with a key or with the remote control then only the anti-theft alarm for the **liftgate** is deactivated.

If the **liftgate** is then closed again, the anti-theft alarm is reactivated for the tailgate after 20 seconds.

The current status of the anti-theft alarm system is stored if the voltage supply to the **GEM** is interrupted. This means that as soon as the voltage supply to the **GEM** is restored it reverts to the stored status (if for example the vehicle was alarmed beforehand, it is then re-alarmed).

DESCRIPTION AND OPERATION

On vehicles with Thatcham Cat1 alarm system (only available in certain markets) the anti-theft alarm system can be deactivated by pressing the release key on the radio remote control. The anti-theft alarm system is not switched off if the vehicle has been unlocked with the key. In order to deactivate the anti-theft alarm system without the radio remote control, the driver door must first be unlocked with the key. A warning signal sounds for 12 seconds before the alarm is triggered. The anti-theft alarm system is deactivated by turning the key to position "II" in the ignition lock within this time.

NOTE: The interior sensors only operate error-free when all windows and the roof opening panel are completely closed. Furthermore, the sensors must not be covered. The system should not be activated when persons, animals or potentially moving objects are present in the vehicle interior.

NOTE: Do not activate the interior sensors while operating an auxiliary heater. This may trigger the alarm.

On vehicles with enhanced anti-theft warning system (optional), the interior sensors register every movement within the vehicle. They are located in the interior lamp assembly. The interior sensors are activated when double locking is activated.

Liftgate release

The tailgate can be unlocked manually:

- with the key
- with the remote release button in the passenger compartment
- with the remote control

The remote release button will not unlock the **liftgate** if the vehicle is centrally locked or if the vehicle is travelling in excess of 6 km/h.

The remote control can be used to unlock the **liftgate** by pressing the corresponding button twice within 3 seconds.

Folding exterior mirrors - vehicles built from 08/2005

Folding in/out of the exterior mirrors can be activated via three different functions:

- activating the exterior mirror foldback switch.
- locking/unlocking the vehicle using the radio remote control.
- switching the ignition on/off.

The folding exterior mirrors can only be activated if this function has been configured in the GEM using WDS or the message center in the instrument.

Battery protection function

The battery protection function prevents the battery from discharging as a result of the interior lighting or the warning sound generator when the engine is switched off.

As soon as the ignition lock is turned to position "I" or "0", a time counter is started in the GEM.

If a door is open the interior lights are switched off after 10 minutes.

If the doors are closed the interior lights, reading lights, luggage compartment lights and the warning sound generator are switched off after 30 minutes.

The battery protection function and the time counter are stopped after the following actions and then if necessary restarted:

- Ignition lock in position "II"
- Opening of a door or the **liftgate**
- Unlocking of a door or the **liftgate** (with a key or the remote control)

The battery protection function continues to operate when the GEM is in service mode or diagnostic mode.

Low-power ■ high-power mode - vehicles built from 08/2005

The GEM has two normal operating modes. In high-power mode, all the functions are executed to their full extent in accordance with the GEM specification. In low-power mode, the GEM functions are minimized in order to spare the battery as much as possible.

DESCRIPTION AND OPERATION

When all the following conditions are fulfilled, the GEM switches to low-power mode:

- Ignition lock is in "0" or "I" position.
- Interior lighting is switched off
- Hazard flasher is switched off
- Alarm system is activated or deactivated
- The exterior lighting is not activated via the peripheral lights or headlamp switch-off delay functions
- Automatic closing function is not activated
- Remote control programming mode is not activated
- Service mode is not activated
- CAN is in standby mode
- Remote control receiver signal is stable
- All software function counters are in standby mode

When one of the following conditions occurs in low-power mode, the GEM switches to high-power mode:

- Ignition lock is in position "II" or "III".
- Door switch (incl. liftgate switch or hood switch) status changes
- Audio unit monitoring status changes
- Anti-theft alarm inhibit switch status changes
- Door lock control switch status changes
- Hazard flasher switch status changes
- Central locking button status changes
- Liftgate release switch status changes
- Heated rear window switch status changes
- Remote control signal is received
- CAN is in active mode

When the GEM is in low-power mode, the further power consumption is reduced by changing the remote control receiver reception strategy following certain time periods as follows:

Time since activation of low-power mode	Duration of remote control receiver "Off" phase
1 - 4 days	Normal duration
5 - 10 days	Double duration
11 - 22 days	Quadruple duration
23 - 31 days	Remote control receiver is permanently switched off

During days 5 to 22 following commencement of low-power mode, it is still possible to lock or unlock the vehicle using the remote control, however the locking button and the unlocking button must be pressed simultaneously for 1.2 seconds in order to ensure that the GEM receives the remote control transmission signals and responds correctly. From day 23 onwards, the vehicle can only be locked or unlocked using the vehicle key.

Diagnosis

The GEM can be diagnosed using WDS.

There is also an additional service mode.

This service mode allows testing of various input and output signals.

Service mode is activated by:

- Pressing and holding the switch for the heated rear window
- Turning the ignition key to position "II"

- Releasing the switch for the heated rear window
- Pressing the switch for the heated rear window 8 times in 6 seconds

A signal sounds and the turn signal lamps come on to indicate that service mode has been successfully activated.

NOTE: If the alarm has been triggered (in vehicles equipped with an anti-theft alarm system), service mode cannot be activated.

The wiper switch must be in the "Off" position for testing the input signals.

The relevant input signals are indicated with an acoustic signal and by the flashing of the turn signal lamps.

The following signals can be tested in any order:

- Turn signals (right, left, hazard signal)
- "Lights on" warning signal
- Interior lighting
- Windshield wipe function
- Windshield wash function

DESCRIPTION AND OPERATION

- Rear window wipe function
- Rear window wash function
- Doors/liftgate
- Central locking
- Hood (only on vehicles with an anti-theft alarm system)
- Heated rear window
- Heated windshield

The wiper switch must be in the "Intermittent" position for testing of the output signals.

Each operation of the heated rear window switch activates and deactivates the following output signals in this order:

- Front wipers (a signal sounds and the turn signal lamps flash when the "**Park**" position is reached)
- Heated rear window
- Interior light(s) (the switch for the interior lights must be in the "Door operation" setting)
- Rear window wiper
- Heated windshield (only activated if the engine is running)

The GEM automatically exits the service mode 20 seconds after the last input.

It is however also possible to manually exit the service mode by:

- Pressing and holding the switch for the heated rear window
- Turning the ignition key out of position "II"
- Releasing the switch for the heated rear window

3 acoustic signals sound and the turn signal lamps come on to confirm that the service mode has been exited.

DIAGNOSIS AND TESTING**Generic Electronic Module (GEM) — Vehicles Built Up To: 1012005****Description of operation**

A diagnosis of the generic electronic module (GEM) can be performed with WDS. Furthermore, an integrated service mode enables testing of the input and output signals without the need for further tools. To enable activation of service mode:

- Switch off the ignition
- Switch off all other electrical consumers
 - Apply the handbrake
 - Shift to neutral
- Close the doors.

Activate service mode

Proceed as follows to activate service mode:

- OPERATE the switch of the heated rear window and HOLD IT THERE
- Turn on the ignition.
- RELEASE the switch of the heated rear window
- PRESS the heated rear window switch 8 times within 6 seconds

A signal sounds and the direction indicator lamps come on to indicate that service mode has been successfully activated.

NOTE: If the alarm sounds (in vehicles fitted with an anti-theft alarm system), service mode cannot be activated.

Input signals

SWITCH the wiper switch to the "Off" position to test the input signals. The following is a list of the signals to be tested, in no particular order:

- Direction indicators (right, left, hazard warning lights)
- "Lights on" warning (terminal 58)
- windshield wiper (intermittent wipe)
- windshield washer system
- rear window wiper
- rear window washer system
- Doors open/closed
- Central locking (if fitted)
- Bonnet up/down (in vehicles fitted with anti-theft alarm system)
- Heated rear window
- Heated windscreen (if fitted)

An acoustic signal sounds and the turn signal lamps flash to indicate receipt of each input signal by the generic electronic module.

Output signals

SWITCH the wiper switch to the "Intermittent" position to test the output signals. PRESSING the heated rear window switch activates or deactivates the output signals in the following order:

- a. Windshield wipers (a signal sounds and the direction indicator lamps flash when the "Park" position is reached)
- b. Heated rear window
- c. Interior light(s) (the interior light switch must be in the "ON" position)
- d. rear window wiper
- e. heated windshield (if equipped, is only activated when engine is running)

If the heated rear window switch is operated again, the sequence restarts with point 'a' and the functions are activated again in this order.

End service mode

The GEM automatically ends service mode 20 seconds after the final input. However, service mode can be manually ended at any time by proceeding as follows:

- OPERATE the switch of the heated rear window and HOLD IT THERE
- Switch off the ignition.
- RELEASE the switch of the heated rear window

3 signals sound and the direction indicator lamps come on to indicate that service mode has ended.

Inspection and Checking

1. CHECK the concern.
2. Visually CHECK for any obvious mechanical or electrical damage.

Visual Inspection

Electrical
— Wiring harness Connectors

DIAGNOSIS AND TESTING

3. RESOLVE any obvious causes for a concern found during the visual inspection before carrying out any further tests. CHECK operation of system.
4. If the concern persists after the visual inspection, PERFORM a fault diagnosis using WDS and RESOLVE the fault(s) displayed according to the fault description. CHECK operation of system.
5. On a vehicle without stored fault(s), continue according to the Symptom Chart and the corresponding symptom.
6. After testing and resolving the fault, the fault memory of all vehicles should be READ OUT and any stored faults CLEARED. READ OUT the all fault memory again after a road test.

Defect Identification Table**Defect Identification Table**

Symptom	Possible Sources	Action
• Service mode cannot be activated	<ul style="list-style-type: none"> • Fuse(s). • Circuit(s). • Integrated control assembly • Generic electronic module (GEM) 	• GO to Pinpoint Test A.
• Generic electronic module (GEM) not communicating with the diagnostic unit	<ul style="list-style-type: none"> • Fuse(s). • Circuit(s). • Generic electronic module (GEM) 	• REFER to Section 418-00 [Module Communications Network].

System Check**PINPOINT TEST A : SERVICE MODE CANNOT BE ACTIVATED**

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK FUSE F24	
	1 Ignition switch in position 0.
	2 CHECK Fuse F24 (CJB). <ul style="list-style-type: none"> • Is the fuse OK? → Yes GO to A2. → No RENEW fuse F24 (20 A). CHECK the operation of the system. If the fuse blows again, LOCATE and RECTIFY the short to ground with the aid of the Wiring Diagrams.
A2: TEST VOLTAGE AT FUSE F24	
	1 Connect Fuse F24 (CJB).

DIAGNOSIS AND TESTING

TEST CONDITIONS

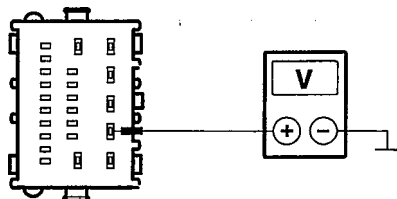
DETAILS RESULTS ACTIONS

	<p>2 Measure the voltage between fuse F24 (20 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A3.</p> <p>→ No REPAIR the voltage supply to fuse F24 with the aid of the Wiring Diagrams. CHECK operation of system.</p>
A3: CHECK FUSE F38	
	<p>1 CHECK Fuse F38 (CJB).</p> <ul style="list-style-type: none"> Is the fuse OK? <p>→ Yes GO to A4.</p> <p>→ No RENEW fuse F38 (7.5 A). CHECK operation of system. If the fuse blows again, LOCATE and RECTIFY the short to ground with the aid of the Wiring Diagrams.</p>
A4: CHECK THE VOLTAGE AT FUSE F38	
	<p>1 Connect Fuse F38 (CJB).</p>
	<p><input type="checkbox"/> Ignition switch in position II.</p>
	<p>3 Measure the voltage between fuse F38 (7.5 A) and ground.</p> <ul style="list-style-type: none"> Does the meter display battery voltage? <p>→ Yes GO to A5.</p> <p>→ No REPAIR the voltage supply to fuse F38 with the aid of the Wiring Diagrams. CHECK operation of system.</p>
A5: CHECK THE VOLTAGE AT THE GENERIC ELECTRONIC MODULE (GEM)	
	<p>1 Ignition switch in position 0.</p>
	<p>2 Disconnect GEM C318 (blue).</p>

DIAGNOSIS AND TESTING

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS



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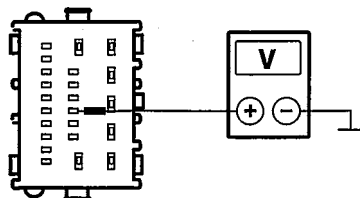
- ☐ Measure the voltage between the GEM, connector C318, pin 2, circuit 29-AA80 (OGIWH), wiring harness side and ground.

- Does the meter display battery voltage?

→ **Yes**
GO to A6.

→ **No**
LOCATE and RECTIFY the break in circuit 29-AA80 (OGIWH) between GEM and fuse F24 with the aid of the Wiring Diagrams. CHECK operation of system.

A6: CHECK THE VOLTAGE AT THE GEM



VFE0028972

- ☐ 1 Disconnect GEM C319 (white).

- ☐ 2 Ignition switch in position II.

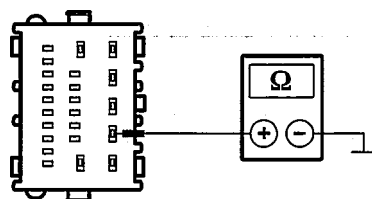
- ☐ 3 Measure the voltage between the GEM, connector C319, pin 10, circuit 15-DK20 (GNI OG), wiring harness side and ground.

- Does the meter display battery voltage?

→ **Yes**
GO to A7.

→ **No**
LOCATE and RECTIFY the break in circuit 15-DK20 (GNI OG) between the GEM and solder point S3 with the aid of the Wiring Diagrams. CHECK operation of system.

A7: TEST THE GEM GROUND CONNECTION



VFE0028971

- ☐ 1 Ignition switch in position 0.

- ☐ Disconnect GEM C316 (black).

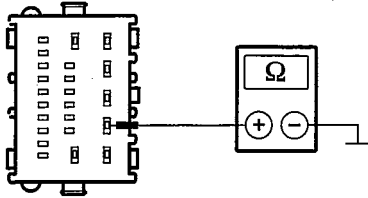
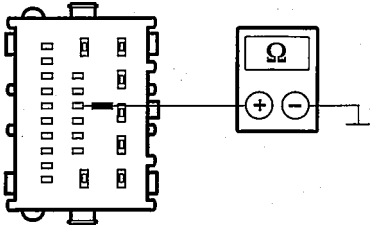
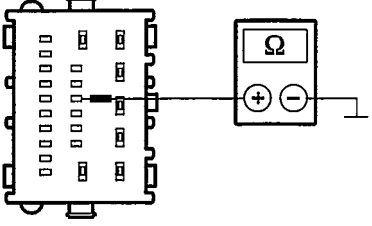
- ☐ 3 Measure the resistance between the GEM, connector C316, pin 2, circuit 31-DK20 (BK), wiring harness side and ground.

- Is a resistance of less than 2 Ohm registered?

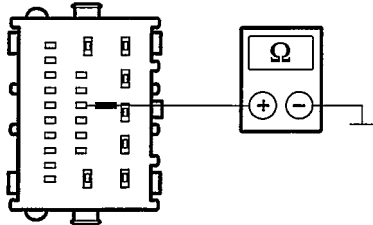
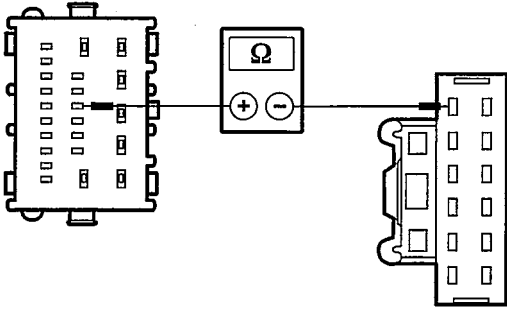
→ **Yes**
GO to A8.

→ **No**
LOCATE and REPAIR the break in the circuit between the GEM and ground point G13 with the aid of the Wiring Diagrams. CHECK operation of system.

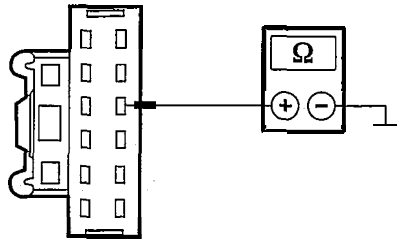
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS RESULTS ACTIONS
A8: TEST THE GEM GROUND CONNECTION	
 <p>VFE0028975</p>	<div> <input type="checkbox"/> Disconnect GEM C320 (brown). </div> <div> 2 Measure the resistance between the GEM, connector C320, pin 2, circuit 91-DK20 (BWRD), wiring harness side and ground. </div> <div> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? </div> <div> → Yes GO to A9. </div> <div> → No LOCATE and RECTIFY the break in circuit 91-DK20 (BWRD) between the GEM and ground connection G14 with the aid of the Wiring Diagrams. CHECK the operation of the system. </div>
A9: CHECK THE CONTROL IMPULSE OF THE HEATED REAR WINDOW SWITCH	
 <p>VFE0029217</p>	<div> 1 Operate the heated rear window switch and keep it operated. </div> <div> 2 Measure the resistance between the GEM, connector C320, pin 11, circuit 31S-HB22 (BWGN), wiring harness side and ground. </div> <div> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? </div> <div> → Yes GO to A10. </div> <div> → No GO to A12. </div>
A10: CHECK THE SWITCH OF THE HEATED REAR WINDOW	
 <p>VFE0029217</p>	<div> 1 Release the switch of the heated rear window. </div> <div> 2 Measure the resistance between the GEM, connector C320, pin 11, circuit 31S-HB22 (BWGN), wiring harness side and ground. </div> <div> <ul style="list-style-type: none"> Is a resistance of more than 10 kOhms measured? </div> <div> → Yes TEST the GEM and RENEW as necessary. CHECK the operation of the system. </div> <div> → No GO to A11. </div>

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS RESULTS ACTIONS
A11: CHECK THE CIRCUIT BETWEEN THE GEM AND THE INTEGRATED CONTROL ASSEMBLY FOR A SHORT TO GROUND	
 <p>VFE0029217</p>	<p>1 Disconnect Integrated control assembly C714.</p> <p>2 Measure the resistance between the GEM, connector C320, pin 11, circuit 31S-HB22 (BWGN), wiring harness side and ground.</p> <ul style="list-style-type: none"> Is a resistance of more than 10 kOhms measured? <p>→ Yes RENEW the integrated control assembly. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the short to ground in circuit 31S-HB22 (BWGN) with the aid of the Wiring Diagrams. CHECK operation of system.</p>
A12: TEST THE CIRCUIT BETWEEN THE GEM AND THE INTEGRATED CONTROL ASSEMBLY FOR OPEN CIRCUIT	
 <p>VFE0029218</p>	<p>1 Disconnect Integrated control assembly C714.</p> <p>2 Measure the resistance between the GEM, connector C320, pin 11, circuit 31S-HB22 (BWGN), wiring harness side and the integrated control assembly, connector C714, pin 1, circuit 31S-HB22 (BWGN), wiring harness side.</p> <ul style="list-style-type: none"> Is a resistance of less than 2 Ohm registered? <p>→ Yes GO to A13.</p> <p>→ No LOCATE and REPAIR the break in circuit 31S-HB22 (BWGN) between the GEM and the integrated control assembly with the aid of the Wiring Diagrams. CHECK the operation of the system.</p>

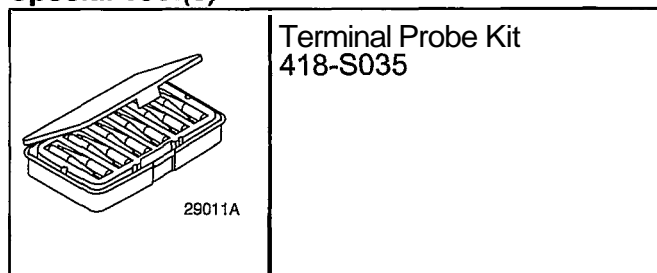
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A13: TEST THE GROUND CONNECTION OF THE INTEGRATED CONTROL ASSEMBLY	
<div><p>VFE0029219</p></div>	<p>Measure the resistance between the integrated control assembly, connector C714, pin 9, circuit 31-DKI (BK), wiring harness side and ground.</p> <p>Is a resistance of less than 2 Ohm registered?</p> <p>→ Yes RENEW the integrated control assembly. CHECK the operation of the system.</p> <p>→ No LOCATE and RECTIFY the break in circuit 31-DK1 (BK) between the integrated control assembly and soldered connection S265 with the aid of the Wiring Diagrams. CHECK the operation of the system.</p>

DIAGNOSIS AND TESTING

Generic Electronic Module (GEM) — Vehicles Built From: 1012005

Special Tool(s)



General Equipment

Digital multimeter

Worldwide Diagnostic System (WDS)

- Windshield wiper (intermittent wipe)
- Windshield washer system
- Rear window wiper
- Rear window washer system
- Doors open/closed
- Central locking (if fitted)
- Hood open/closed (in vehicles equipped with an anti-theft alarm system)
- Heated rear window
- Heated windscreen (if fitted)

An acoustic signal sounds and the turn signal lamps flash to indicate receipt of each input signal by the generic electronic module.

Description of operation

A diagnosis of the generic electronic module (GEM) can be performed with WDS. Furthermore, an integrated service mode enables testing of the input and output signals without the need for further tools. To enable activation of service mode:

- switch off the ignition,
- switch off all other electrical consumers,
- apply the handbrake,
- shift to neutral
- and close the doors.

Activating the service mode

Proceed as follows to activate the service mode:

- OPERATE the switch of the heated rear window and HOLD IT THERE
- Turn on the ignition.
- RELEASE the switch of the heated rear window
PRESS the heated rear window switch 8 times within 6 seconds

A signal sounds and the turn signal lamps flash to indicate that service mode has been successfully activated.

NOTE: If the alarm has been triggered (in vehicles equipped with an anti-theft alarm system), service mode cannot be activated.

Input signals

SWITCH the wiper switch to the "Off" position to test the input signals. The following is a list of the signals to be tested, in no particular order:

- Turn signals (right, left, hazard warning lights)
- "Lights on" warning (terminal 58)

Output signals

SWITCH the wiper switch to the "Intermittent" position to test the output signals. PRESSING the heated rear window switch activates or deactivates the output signals in the following order:

- a. Windshield wipers (a signal sounds and the direction indicator lamps flash when the "Park" position is reached)
- b. Heated rear window
- c. Interior light(s) (the interior light switch must be in the "ON" position)
- d. Rear window wiper
- e. heated windshield (if fitted, is only activated when engine is running)

If the heated rear window switch is operated again, the sequence restarts with point 'a' and the functions are activated again in this order.

Ending the service mode

The GEM automatically ends service mode 20 seconds after the last input. However, service mode can be manually ended at any time by proceeding as follows:

- OPERATE the switch of the heated rear window and HOLD IT THERE
- SWITCH OFF the ignition
RELEASE the switch of the heated rear window

3 signals sound and the turn signal lamps illuminate to indicate that service mode has ended.

Inspection and Testing

1. VERIFY the customer concern.

DIAGNOSIS AND TESTING

2. Visually **CHECK** for any obvious mechanical or electrical damage.

NOTE: Ensure correct locking of wiring harness connector.

Visual Inspection

Electrical
Fuses.
Wiring harness.
Electrical connectors.

3. **RECTIFY** any obvious causes for a concern found during the visual inspection before performing any further tests. **CHECK** the operation of the system.

4. If the concern persists after the visual inspection, **PERFORM** a fault diagnosis with WDS and **RECTIFY** any displayed faults in accordance with the displayed fault description. **CHECK** the operation of the system.
5. For vehicles with no stored faults, **PROCEED** in accordance with the Symptom Chart and the corresponding fault symptom.
6. Following checking or elimination of the fault and after completion of operations, the fault memories of all vehicle modules must be **READ OUT** and any stored faults must be **DELETED**. **READ OUT** all fault memories again following a road test.

DIAGNOSIS AND TESTING**Fault Code Table**

DTC:	Description	Action
B2496	Circuit of anti-theft alarm horn faulty (short to ground).	REFER to: Anti-Theft - Active (419-01A, Diagnosis and Testing).
B2494	Circuit of anti-theft alarm horn faulty (short to voltage).	REFER to: Anti-Theft - Active (419-01A, Diagnosis and Testing).
B1300	Circuit of central locking switch faulty.	REFER to: Locks, Latches and Entry Systems (501-14, Diagnosis and Testing).
B1310	Circuit of door lock release switch faulty.	REFER to: Locks, Latches and Entry Systems (501-14, Diagnosis and Testing).
B1317	Battery voltage too high (more than 16.5 V).	REFER to: Charging System (414-00, Diagnosis & Testing).
B1318	Battery voltage too low (less than 7.5 V).	REFER to: Charging System (414-00, Diagnosis & Testing).
B1319	Circuit of driver side door contact switch faulty (open circuit).	REFER to: Interior Lighting (417-02, Diagnosis and Testing).
B1327	Circuit of passenger door contact switch faulty (open circuit).	REFER to: Interior Lighting (417-02, Diagnosis and Testing).
B1571	Circuit of rear left door contact switch faulty (open circuit).	REFER to: Interior Lighting (417-02, Diagnosis and Testing).
B1335	Circuit of rear right door contact switch faulty (open circuit).	REFER to: Interior Lighting (417-02, Diagnosis and Testing).
B1331	Circuit of tailgate contact switch faulty (open circuit).	REFER to: Interior Lighting (417-02, Diagnosis and Testing).
B1342	Module fault.	INSTALL a new GEM.
B1343	Circuit of rear window heater switch faulty (short to ground).	REFER to: (501-11) Glass Frames and Mechanisms (Diagnosis and Testing), Glass Frames and Mechanisms 2.0L Duratec-HE (MI4) (Diagnosis and Testing).

DIAGNOSIS AND TESTING

DTC:	Description	Action
B1350	Circuit of heated rear window relay faulty (short to ground).	REFER to: (501-11) Glass Frames and Mechanisms (Diagnosis and Testing), Glass Frames and Mechanisms - 2.0L Duratec-HE (MI4) (Diagnosis and Testing).
B1349	Circuit of heated rear window relay faulty (short to voltage).	REFER to: (501-11) Glass Frames and Mechanisms (Diagnosis and Testing), Glass Frames and Mechanisms - 2.0L Duratec-HE (MI4) (Diagnosis and Testing).

DIAGNOSIS AND TESTING

DTC:	Description	Action
B1446	Circuit of windshield wiper limit switch (park position) faulty (short to ground).	REFER to: Wipers and Washers (501-16, Diagnosis and Testing).
B1499	Circuit of left-hand turn signal lamp faulty (short to ground).	REFER to: Turn Signal and Hazard Lamps (417-01, Diagnosis and Testing).
B1503	Circuit of right-hand turn signal lamp faulty (short to ground).	REFER to: Turn Signal and Hazard Lamps (417-01, Diagnosis and Testing).
B2282	Circuit of left-hand turn signal lamp switch faulty (short to ground).	REFER to: Turn Signal and Hazard Lamps (417-01, Diagnosis and Testing).
B2281	Circuit of right-hand turn signal lamp switch faulty (short to ground).	REFER to: Turn Signal and Hazard Lamps (417-01, Diagnosis and Testing).
B1519	Circuit of hood contact switch faulty (open circuit).	REFER to: Anti-Theft - Active (419-01A, Diagnosis and Testing).
B2555	Circuit of interior light faulty (short to voltage)	REFER to: Interior Lighting (417-02, Diagnosis and Testing).
B2598	Circuit of exterior lighting relay faulty (short to voltage)	REFER to: Headlamps (417-01, Diagnosis and Testing).
B1695	Circuit of headlamp switch (Autolamps) faulty (short to voltage) - vehicles with auto-on system for exterior lighting.	REFER to: Headlamps (417-01, Diagnosis and Testing).
B1578	Circuit of marker lamp faulty (short to ground).	REFER to: Parking, Rear and License Plate Lamps (417-01, Diagnosis and Testing).
B1810	Circuit of reversing light switch faulty (short to voltage).	REFER to: Reversing Lamps (417-01, Diagnosis and Testing).
B1315	Circuit of battery protection relay faulty (short to voltage).	Refer to WDS.
B1316	Circuit of battery protection relay faulty (short to ground).	Refer to WDS.

DIAGNOSIS AND TESTING

DTC:	Description	Action
B1875	Circuit of hazard warning light switch faulty (short to ground).	REFER to: Turn Signal and Hazard Lamps (417-01, Diagnosis and Testing).
B2248	Circuit of heated windshield relay faulty (short to voltage).	REFER to: (501-11) Glass Frames and Mechanisms (Diagnosis and Testing), Glass Frames and Mechanisms - 2.0L Duratec-HE (MI4) (Diagnosis and Testing).
B2256	Circuit of heated windshield relay faulty (short to ground).	REFER to: (501-11) Glass Frames and Mechanisms (Diagnosis and Testing), Glass Frames and Mechanisms - 2.0L Duratec-HE (MI4) (Diagnosis and Testing).
B2113	Circuit of windshield heating switch faulty (short to ground).	REFER to: (501-11) Glass Frames and Mechanisms (Diagnosis and Testing), Glass Frames and Mechanisms - 2.0L Duratec-HE (MI4) (Diagnosis and Testing).

DIAGNOSIS AND TESTING

DTC:	Description	Action
B2114	Circuit of windshield washer system switch faulty (short to ground).	REFER to: Wipers and Washers (501-16, Diagnosis and Testing).
B2115	Circuit of rear window washer system switch faulty (short to ground).	REFER to: Wipers and Washers (501-16, Diagnosis and Testing).
B2177	Circuit of interior scanning sensor faulty.	REFER to: Anti-Theft - Active (419-OI A, Diagnosis and Testing).
B1439	Circuit of windshield wash/wipe system switch (intermittent position) faulty (open circuit).	REFER to: Wipers and Washers (501-16, Diagnosis and Testing).
B1611	Circuit of rear wash/wipe system switch faulty.	REFER to: Wipers and Washers (501-16, Diagnosis and Testing).
B2339	Circuit of switch for electrically adjustable exterior mirrors faulty.	REFER to: (501-09) Exterior Mirror (Diagnosis and Testing), Exterior Mirror - 2.0L Duratec-HE (M14) (Diagnosis and Testing), Exterior Mirror (Diagnosis and Testing).
B1101	Circuit of electrically adjustable exterior mirrors faulty (short to ground).	REFER to: (501-09) Exterior Mirror (Diagnosis and Testing), Exterior Mirror - 2.0L Duratec-HE (M14) (Diagnosis and Testing), Exterior Mirror (Diagnosis and Testing).
B110B	Circuit of relay for electrically adjustable exterior mirrors faulty (short to ground).	REFER to: (501-09) Exterior Mirror (Diagnosis and Testing), Exterior Mirror - 2.0L Duratec-HE (M14) (Diagnosis and Testing), Exterior Mirror (Diagnosis and Testing).

DIAGNOSIS AND TESTING

DTC:	Description	Action
B211A	Circuit of windshield washer system relay faulty (short to ground).	REFER to: Wipers and Washers (501-16, Diagnosis and Testing).
B2477	Module configuration faulty.	CONFIGURE GEM again using WDS. If the fault occurs again, RENEW THE GEM.
B2112	Circuit of anti-theft alarm system activation switch faulty (short to ground).	REFER to: Anti-Theft - Active (419-01A, Diagnosis and Testing).
B2116	Circuit of anti-theft alarm system deactivation switch faulty (short to ground).	REFER to: Anti-Theft - Active (419-01A, Diagnosis and Testing).
B2665	Circuit of alarm horn with battery faulty (short to voltage).	REFER to: Anti-Theft - Active (419-01A, Diagnosis and Testing).
B1554	Tailgate unlocking circuit faulty (short to ground)	REFER to: Locks, Latches and Entry Systems (501-14, Diagnosis and Testing).
B1553	Tailgate unlocking circuit faulty (short to voltage)	REFER to: Locks, Latches and Entry Systems (501-14, Diagnosis and Testing).
B1551	Circuit of tailgate unlocking switch faulty (short to ground).	REFER to: Locks, Latches and Entry Systems (501-14, Diagnosis and Testing).
B1600	Circuit of PATS transponder faulty.	Refer to WDS.
B2108	Circuit of tailgate contact switch faulty.	REFER to: Locks, Latches and Entry Systems (501-14, Diagnosis and Testing).
B1298	Circuit of power supply sensor (terminal 15) faulty (short to voltage).	GO to Pinpoint Test A.
B1299	Circuit of power supply sensor (terminal 15) faulty (short to ground).	GO to Pinpoint Test A.
B2432	Circuit of driver's side belt buckle switch faulty.	Refer to WDS.

DIAGNOSIS AND TESTING

DTC:	Description	Action
U0146	No communication with gateway A.	REFER to: Communications-Network - Vehicles Built From: 0812005 (418-00, Diagnosis and Testing).
U0151	No communication with the restraints control module.	REFER to: Communications-Network - Vehicles Built From: 0812005 (418-00, Diagnosis and Testing).
U0155	No communication with the electronic instrument cluster.	REFER to: Communications-Network - Vehicles Built From: 0812005 (418-00, Diagnosis and Testing).
U0231	No communication with the light switch module.	REFER to: Communications-Network - Vehicles Built From: 0812005 (418-00, Diagnosis and Testing).
U0166	No communication with the fuel fired booster heater.	REFER to: Communications-Network - Vehicles Built From: 0812005 (418-00, Diagnosis and Testing).

Symptom chart

Symptom chart

Symptom	Possible Sources	Action
• Generic electronic module (GEM) not communicating with the diagnostic unit.	<ul style="list-style-type: none"> • Fuse(s). • Circuit(s). • Generic electronic module (GEM). 	• REFER to: Communications-Network - Vehicles Built From: 0812005 (418-00, Diagnosis and Testing).

System Check

PINPOINT TEST B : VOLTAGE SUPPLY (TERM. 15) FAULTY.

TEST CONDITIONS

DETAILS/RESULTS/ACTIONS

A1: CHECK FUSE F38	
	<input type="checkbox"/> Ignition switch in position 0.
	2 CHECK fuse F38 (CJB). <ul style="list-style-type: none"> • Is the fuse OK? → Yes GO to A2. → No RENEW fuse F38 (7.5 A). CHECK the operation of the system. If the fuse blows again, LOCATE and REPAIR the short using the Wiring Diagrams.

DIAGNOSIS AND TESTING

TEST CONDITIONS

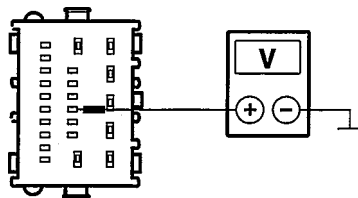
DETAILS/RESULTS/ACTIONS

A2: CHECK THE VOLTAGE AT FUSE F38

- 1 Connect fuse F38 (CJB).
- ☐ Ignition switch in position II.
- ☐ Measure the voltage between fuse F38 (7.5 A) and ground.
 - Is battery voltage measured?
 - **Yes**
GO to A3.
 - **No**
CHECK the voltage supply to fuse F38 and REPAIR using the Wiring Diagrams. CHECK the operation of the system.

A3: CHECK CIRCUIT BETWEEN FUSE F38 AND GENERIC ELECTRONIC MODULE (GEM) FOR SHORT TO VOLTAGE

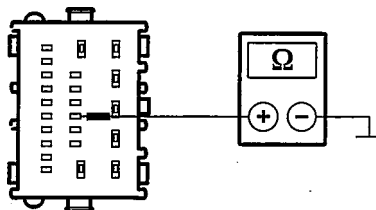
- 1 Ignition switch in position 0.
- 2 Disconnect Connector C319 from GEM.



VFE0028972

- ☐ Measure the voltage between the GEM, connector C319, pin 10, circuit 15-DK20 (GNIOG), wiring harness side and ground.
 - Is a voltage measured?
 - **Yes**
LOCATE and RECTIFY the short to voltage supply in the circuits connected to soldered connection S3 using the Wiring Diagrams. CHECK the operation of the system.
 - **No**
GO to A4.

A4: CHECK CIRCUIT BETWEEN FUSE F38 AND GENERIC ELECTRONIC MODULE (GEM) FOR SHORT TO GROUND

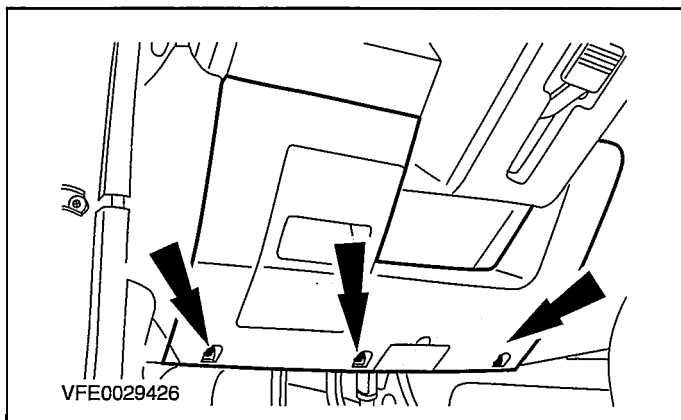


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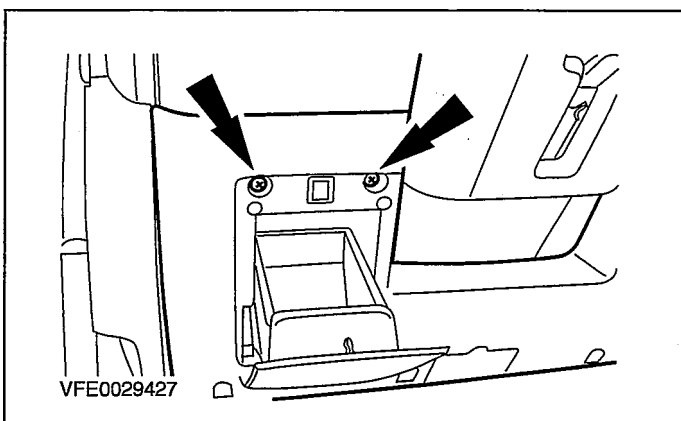
- 1 Measure the resistance between the GEM, connector C319, pin 10, circuit 15-DK20 (GNIOG), wiring harness side and ground.
 - Is a resistance of more than 10,000 ohms measured?
 - **Yes**
TEST the GEM and RENEW as necessary. CHECK the operation of the system.
 - **No**
LOCATE and RECTIFY the short to ground in the circuits connected to soldered connection S3 using the Wiring Diagrams. CHECK the operation of the system.

REMOVAL AND INSTALLATION**Generic Electronic Module (GEM)****Removal**

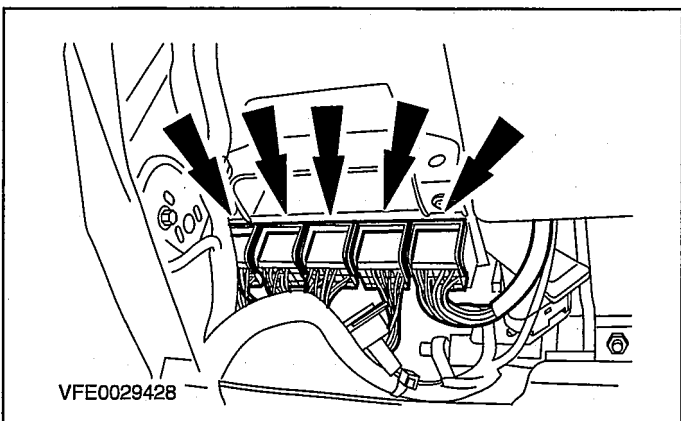
1. Unscrew and remove the bolts for the lower fascia/crash padding cover.



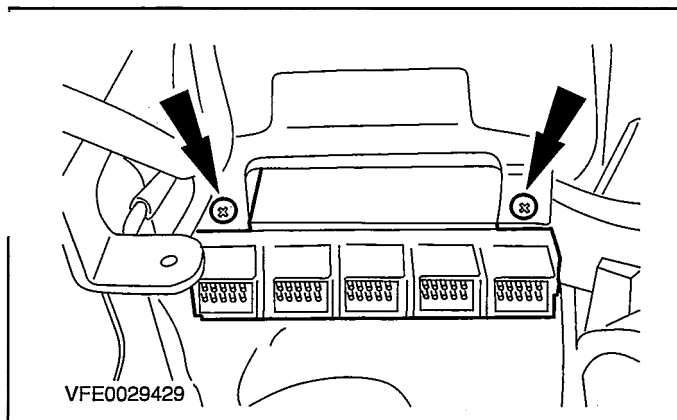
2. Detach the lower fascia/crash padding cover.



3. Disconnect the GEM connector.



4. Remove the GEM.

**Installation**

1. **NOTE:**Initialise the GEM with WDS after installation.

Refit the components in reverse order.

2006.0 Fiesta

Wiring Diagrams



Table of Contents

GROUP 2 chassis

Brake System	
Parking Brake and Actuation	206-05
Hydraulic Brake Actuation	206-06
Anti-Lock Control	206-09A
Anti-Lock Control - Stability Assist	206-09B
Steering System	
Power Steering	211-02
Steering Column Switches	211-05

GROUP 3 Powertrain

Engine	
Engine Cooling - 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)	303-03A
Engine Cooling - 2.0L Duratec-HE (MI4)	303-03B
Fuel Charging and Controls - 1.3L Duratec-8V (Rocam)	303-04A
Fuel Charging and Controls - 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)	303-04B
Fuel Charging and Controls - 1.4L Duratorq-TDCi (DV) Diesel	303-04C
Fuel Charging and Controls - Turbocharger - 1.4L Duratorq-TDCi (DV) Diesel	303-04D
Fuel Charging and Controls - 2.0L Duratec-HE (MI4)	303-04E
Fuel Charging and Controls - 1.6L Duratorq-TDCi (DV) Diesel	303-04F
Starting System	303-06

Engine Ignition	303-07A
Glow Plug System - 1.4L Duratorq-TDCi (DV) Diesel	303-07B
Engine Ignition - 2.0L Duratec-HE (MI4)	303-07C
Engine Emission Control - 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma)	303-08
Evaporative Emissions	303-13
Electronic Engine Controls	303-14
Automatic Transmission/Transaxle	
Automatic Transmission/Transaxle - Vehicles With: 4-Speed Automatic Transmission (AW81-40)	307-01A
Automatic Transmission/Transaxle - Vehicles With: 4-Speed Automatic Transmission (AW81-40)	307-01B
Automatic Transmission/Transaxle External Controls - Vehicles With: 4-Speed Automatic Transmission (AW81-40)	307-05
Manual Transmission/Transaxle, Clutch and Transfer Case	
Manual Transmission/Transaxle Automated Gearshift System	308-11
Fuel System	
Fuel Tank and Lines	310-01

GROUP 4 Electrical

Climate Control System	
Climate Control	412-01
Heating and Ventilation	412-02A
Auxiliary Heating	412-02B
Auxiliary Climate Control	412-02C
Air Conditioning	412-03

Instrumentation and Warning Systems

Instrument Cluster and Panel Illumination	413-00
Instrument Cluster	413-01
Horn	413-06
Information and Message Center	413-08

Battery and Charging System

Battery, Mounting and Cables	414-01
Generator and Regulator	414-02

Information and Entertainment Systems

Audio Unit	415-OIA
Information and Entertainment System	415-01B

Lighting

Exterior Lighting	417-01
Interior Lighting	417-02
Daytime Running Lamps (DRL)	417-04

Electrical Distribution

Module Communications Network	418-00
-------------------------------	--------

Electronic Feature Group

Anti-Theft - Active	419-OIA
Anti-Theft - Passive	419-01B

Multifunction Electronic Modules

419-10

GROUP 5 Body and Paint**Body and Paint**

Rear View Mirrors	501-09
Seating	501-10
Glass, Frames and Mechanisms	501-11
Instrument Panel and Console	501-12
Handles, Locks, Latches and Entry Systems	501-14
Wipers and Washers	501-16
Safety Belt System	501-20A
Supplemental Restraint System	501-20B

GROUP 7 General Wiring Information**Wiring Information**

General Information	700-00
Fuse and Relay Information	700-01
Power Distribution	700-02
Grounding Strategy	700-03
Wiring Harness Information	700-05

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FORD-WERKE AKTIENGESELLSCHAFT

Service training programs D-FIGT-1

Printed in Germany - rewi druckhaus, Wissen

Printed on environmentally friendly
chlorine-free paper. (GB)

GROUP

2

Chassis

SECTION TITLE	PAGE
Brake System	
Parking Brake and Actuation.....	206-05
Hydraulic Brake Actuation.....	206-06
Anti-Lock Control.....	206-09A
Anti-Lock Control - Stability Assist.....	206-09B
Steering System	
Power Steering.....	211-02
Steering Column Switches.....	211-05

Powertrain 3

SECTION TITLE	PAGE
Engine	
Engine Cooling1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	303-03A
Engine Cooling2.0L Duratec-HE (MI4).....	303-03B
Fuel Charging and Controls1.3L Duratec-8V (Rocam).....	303-04A
Fuel Charging and Controls1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	303-04B
Fuel Charging and Controls1.4L Duratorq-TDCi (DV) Diesel.....	303-04C
Fuel Charging and Controls - Turbocharger1.4L Duratorq-TDCi (DV) Diesel.....	303-04D
Fuel Charging and Controls2.0L Duratec-HE (MI4).....	303-04E
Fuel Charging and Controls1.6L Duratorq-TDCi (DV) Diesel.....	303-04F
Starting System.....	303-06
Engine Ignition.....	303-07A
Glow Plug System1.4L Duratorq-TDCi (DV) Diesel.....	303-07B
Engine Ignition2.0L Duratec-HE (MI4).....	303-07C
Engine Emission Control1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	303-08
Evaporative Emissions.....	303-13
Electronic Engine Controls.....	303-14
Automatic Transmission/Transaxle	
Automatic Transmission/TransaxleVehicles With: 4-Speed Automatic Transmission (AW81-40).....	307-01A
Automatic Transmission/TransaxleVehicles With: 4-Speed Automatic Transmission (AW81-40).....	307-01B
Automatic Transmission/Transaxle External ControlsVehicles With: 4-Speed Automatic Transmission (AW81-40).....	307-05
Manual Transmission/Transaxle, Clutch and Transfer Case	
Manual Transmission/Transaxle Automated Gearshift System.....	308-11
Fuel System	
Fuel Tank and Lines.....	310-01

Electrical

GROUP 4

SECTION TITLE	PAGE
Climate Control System	
Climate Control.....	412-01
Heating and Ventilation.....	412-02A
Auxiliary Heating.....	412-02B
Auxiliary Climate Control.....	412-02C
Air Conditioning.....	412-03
Instrumentation and Warning Systems	
Instrument Cluster and Panel Illumination.....	413-00
Instrument Cluster.....	413-01
Horn.....	413-06
Information and Message Center.....	413-08
Battery and Charging System	
Battery, Mounting and Cables.....	414-01
Generator and Regulator.....	414-02
Information and Entertainment Systems	
Audio Unit.....	415-01A
Information and Entertainment System.....	415-01B
Lighting	
Exterior Lighting.....	417-01
Interior Lighting.....	417-02
Daytime Running Lamps (DRL).....	417-04
Electrical Distribution	
Module Communications Network.....	418-00
Electronic Feature Group	
Anti-Theft - Active.....	419-01A
Anti-Theft - Passive.....	419-01B
Multifunction Electronic Modules.....	419-10

GROUP

5

Body and Paint

SECTION TITLE	PAGE
Body and Paint	
Rear View Mirrors.....	501-09
Seating.....	501-10
Glass, Frames and Mechanisms.....	501-11
Instrument Panel and Console.....	501-12
Handles, Locks, Latches and Entry Systems.....	501-14
Wipers and Washers.....	501-16
Safety Belt System.....	501-20A
Supplemental Restraint System.....	501-20B

General Wiring Information

GROUP

7

SECTION TITLE	PAGE
Wiring Information	
General Information.....	700-00
Fuse and Relay Information.....	700-01
Power Distribution.....	700-02
Grounding Strategy.....	700-03
Wiring Harness Information.....	700-05

SECTION 412-01 Climate Control

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

CONNECTORS

Blower Motor Resistor.....	412-01-2
Blower Motor Switch.....	412-01-3
Air Conditioning (NC) Cycling Switch.....	412-01-4
Air Conditioning (A/C) Pressure Transducer.....	412-01-5
Ambient Air Temperature Sensor.....	412-01-6
Air Conditioning (A/C) Switch.....	412-01-7
Blower Motor.....	412-01-8
Blower Motor Control Module.....	412-01-9
Footwell Air Discharge Temperature Sensor.....	412-01-10
Electronic Automatic Temperature Control (EATC) Module.....	412-01-11
Temperature Blend Door Actuator.....	412-01-12
In-Vehicle Temperature Sensor LH.....	412-01-13
In-Vehicle Temperature Sensor RH.....	412-01-14
Sunload Sensor.....	412-01-15
Clutch and Clutch Field Coil.....	412-01-16
Air Conditioning (NC) Clutch Diode.....	412-01-17
Air Conditioning (NC) Wide Open Throttle (WOT) Relay.....	412-01-18
Air Conditioning (A/C) Dual Pressure Switch.....	412-01-19
Recirculation Blend Door Actuator.....	412-01-20
Climate Control Assembly Illumination Bulbs.....	412-01-21
Center Register Air Discharge Temperature Sensor.....	412-01-22
Defrost Vent/Register Blend Door Actuator.....	412-01-23
Electronic Automatic Temperature Control (EATC) Module.....	412-01-24
Clutch and Clutch Field Coil.....	412-01-25
Clutch and Clutch Field Coil.....	412-01-26



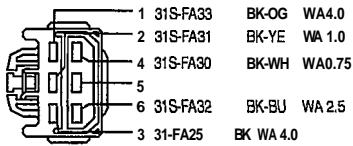
4STT-14489-YLA

C-323

TO HEATER BLOWER SERIES RESISTOR

HARNESS 14K024

PIN4 => 31S-FA13 BK-OG 0.35 WA + 31S-FA30 BK-WH 0.75 WA



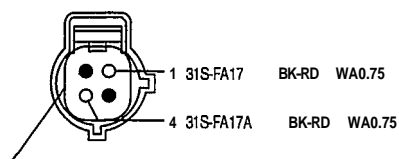
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C-324

TO HEATER BLOWER SWITCH

HARNESS 14K024

PIN 4 => 31S-FA17A BK-RD 0.75 WK
PIN 1 => 31S-FA17 BK-RD 0.75 WK

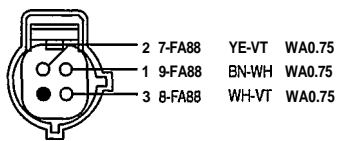


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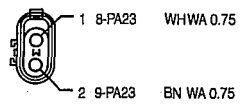
C-402

TO A/C COMPRESSOR CYCLING SWITCH

HARNESS 14K011



XW4T-14A464-AVA
G427
TO A/C PRESSURE TRANSDUCER SENSOR (ST150)
HARNESS 12A522

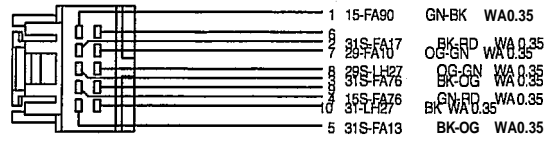


91AG-14A464-BBC

C-245

TO AMBIENTE AIR TEMPESENSOR (ST150)

HARNESS12A522

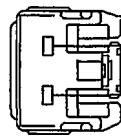


2L1T-14A464-HA

C-302

TO A/C SWITCH(HV AC CONTROL PANEL)

HAANESS14K024



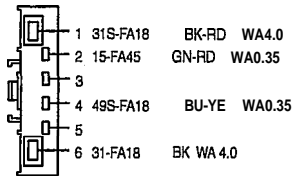
2 31S-FA18 BK-RD WA4.0
1 15-FA18 GN-OG WA4.0

3M5T-14489-KBA

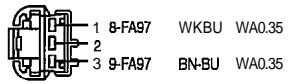
C-322

TO HEATER BLOWER MOTOR

HARNESS 14K024



3M5T-14489-VFA
C-382
m HEATER BLOWER CONTROL MODULE
HARNES14K024

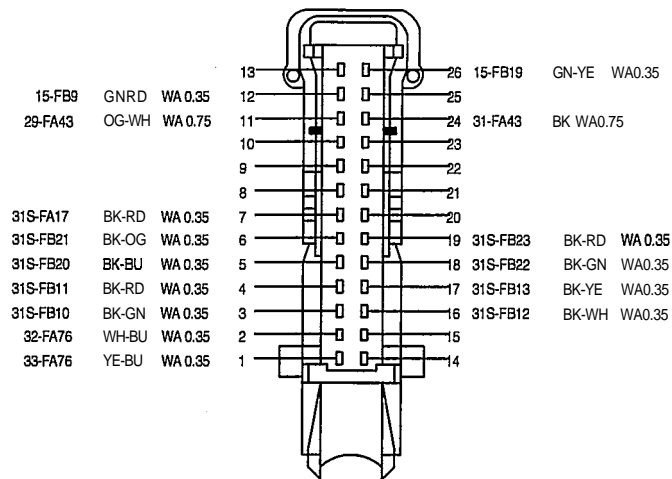


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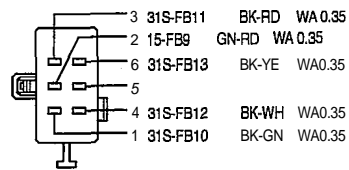
C-363

TO FLOOR DISCHARGE SENSOR

HARNESS 14K024



98BG-14489-RZA
 C-366
 TO EATC MODULE (C1)
 HARNESS14K024

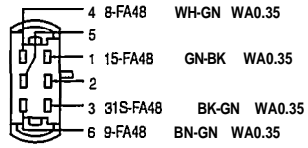


95AG-14489-RFA

C-369

TO AIR TEMP DOOR MOTOR

HARNESS 14K024



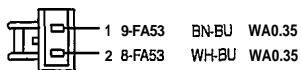
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C-388

TO LEFT INTERIOR TEMP. SENSOR

HARNESS 14K024

412-01-14 In-Vehicle Temperature Sensor RH
Information not available at this time



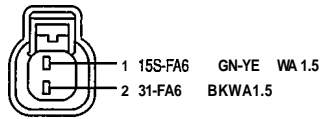
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C-389

TOSUNLOADSENSOR

HARNESS 14K024



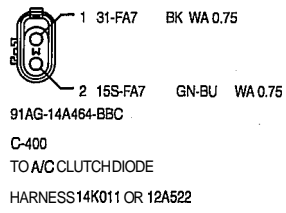


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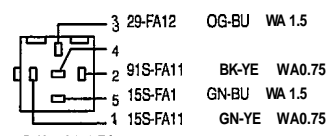
C-398

TO A/C CLUTCH SOLENOID (ST150)

HARNESS 12A522



PIN 5 => 15S-FA6 GN-YE 1.5 WK
PIN 5 => 15S-FA6 GN-YE 1.0 WK



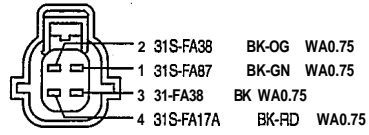
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C-403

TO A/C WIDE OPEN THROTTLE WOT RELAY

HARNESS 14K011 OR 12A522

PIN 4 => 31S-FA17A BK-RD 0.75 WK
 PIN 3 => 31S-FA38 BK 0.75 WK
 PIN 1 => 31S-FA87 BK-GN 0.75 WK
 PIN 2 => 31S-FA38 BK-OG 0.75 WK



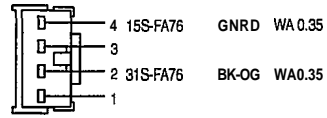
YF1T-14A464-BA

C-405

TO DUAL PRESSURE SWITCH

HARNESS 14K011

PIN 2 => 33-FA76 YE-BU 0.35 VA
PIN 4 => 32-FA76 WH-BU 0.35 WA

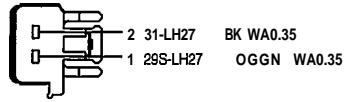


XR8T-14489-UA

C-611

TO RECIRCULATION DOOR MOTOR

HARNESS 14K024

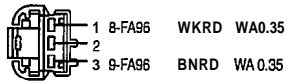


4S7T-14489-VNA

G620

TO HEATER PANEL ILLUMINATION LAMP

HARNESS 14K024

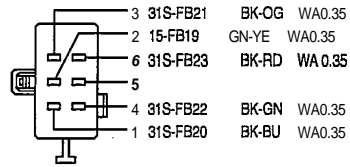


2L2T-14A464-BA

C-364

TO PANEL DISCHARGE SENSOR

HARNESS14K024

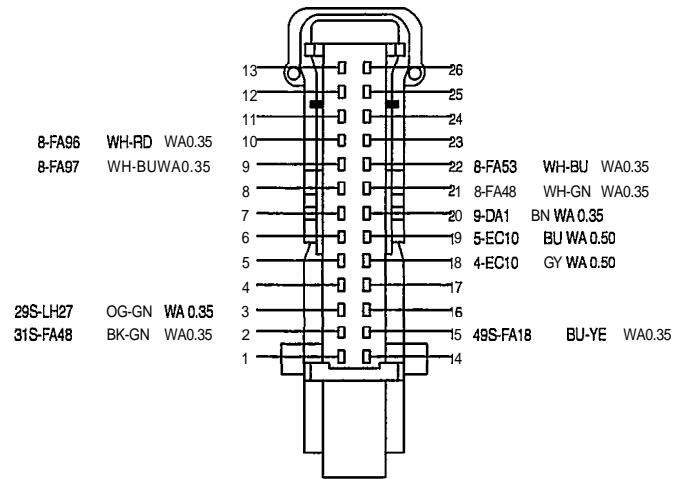


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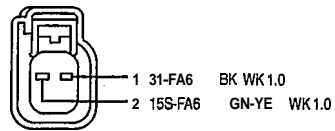
C-368

TO MODE DOOR MOTOR

HARNESS 14K024



98AG-14489-RZA
C-367
TO EATC MODULE (C2)
HARNESS14K024



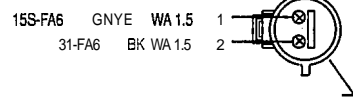
YF1T-14A464-FA

C-399

TO A/C CLUTCH SOLENOID (DV6)

HARNESS14K011

PIN 1 => 15S-FA6 GN-YE 1.5 WK
PIN 2 => 31-FA6 BK WA 1.5

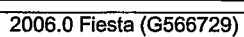


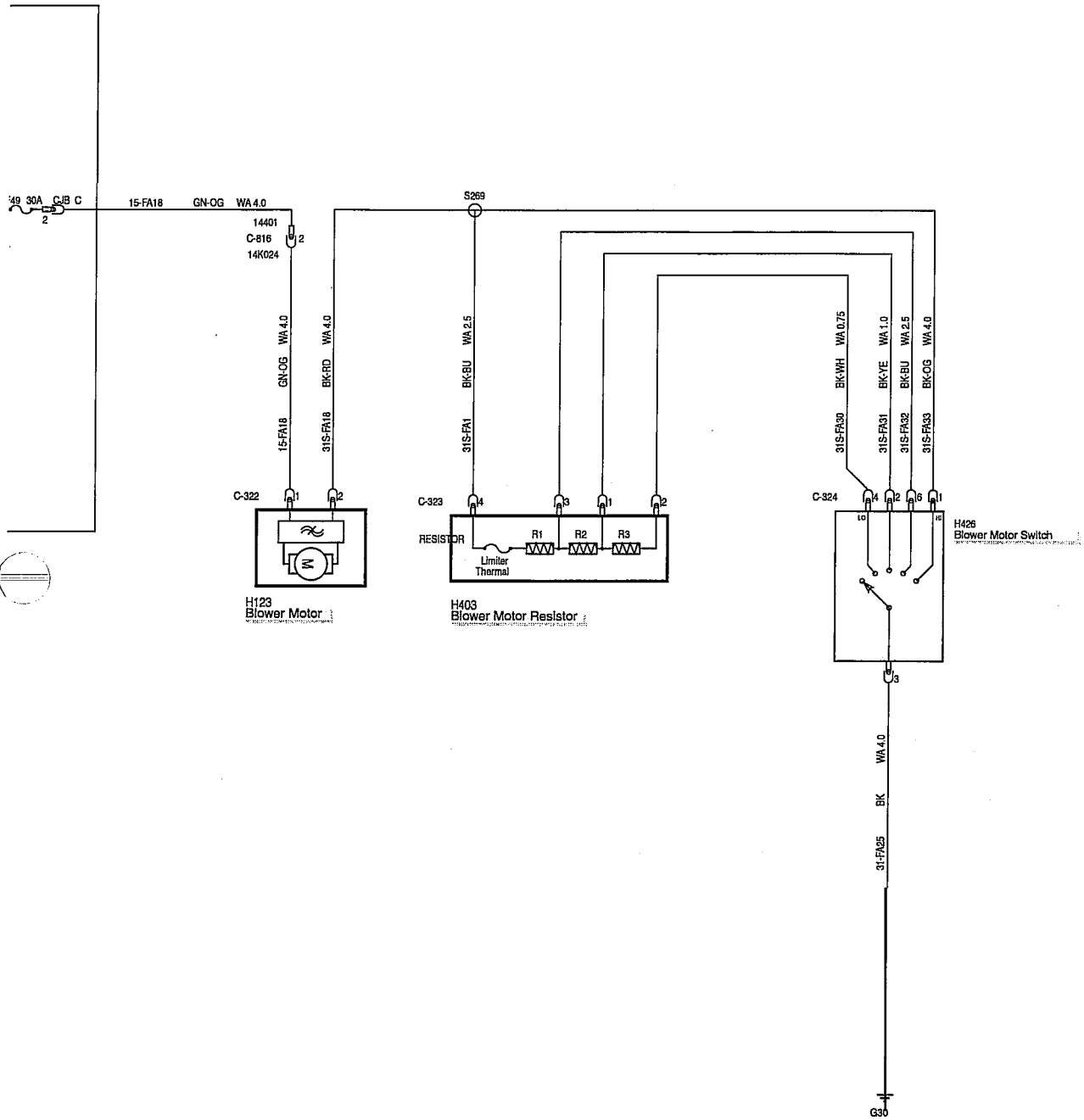
F57B-14A624-FA
C-401
TO A/C CLUTCH SOLENOID
HARNESS 14K011

SECTION 412-02A Heating and Ventilation

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SCHEMATICS	
Blower Motor.....	412-02A-2







SECTION 412-02B Auxiliary Heating

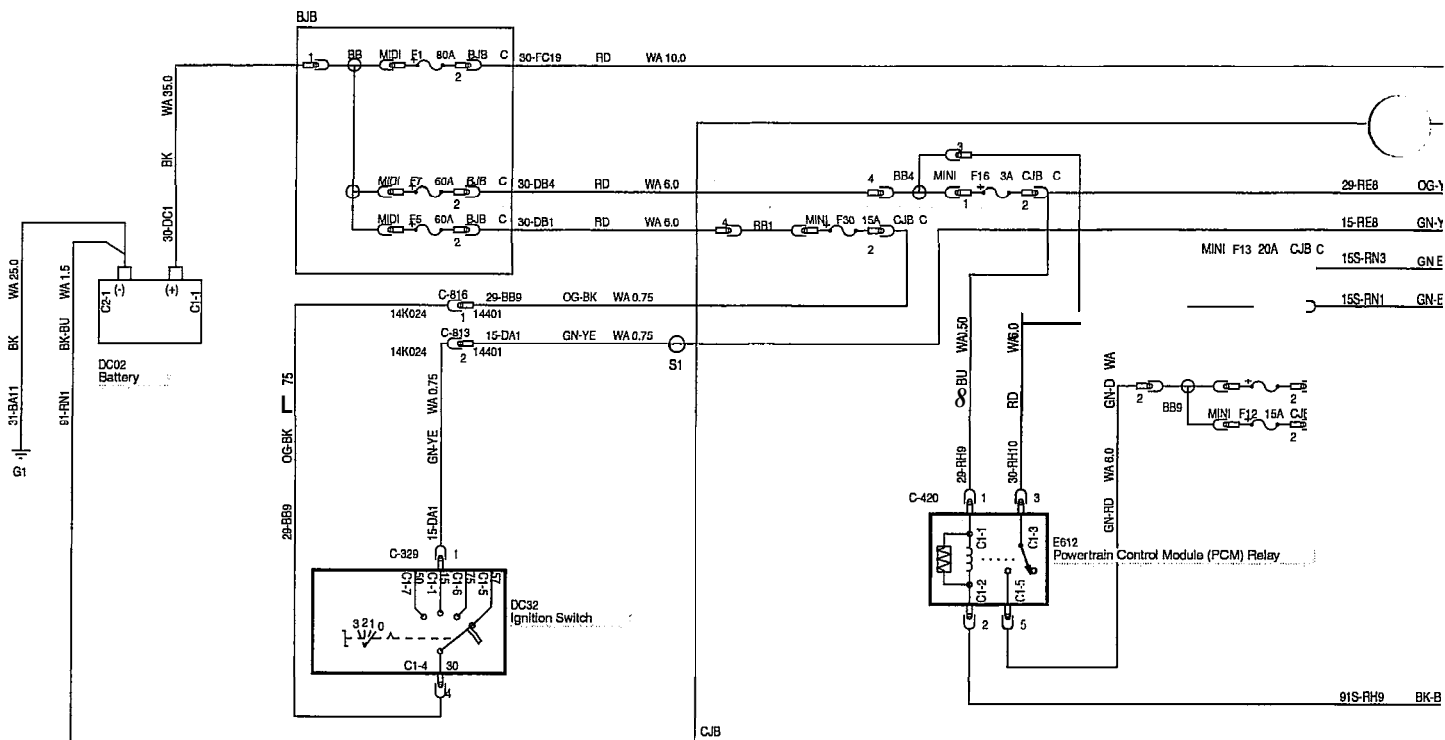
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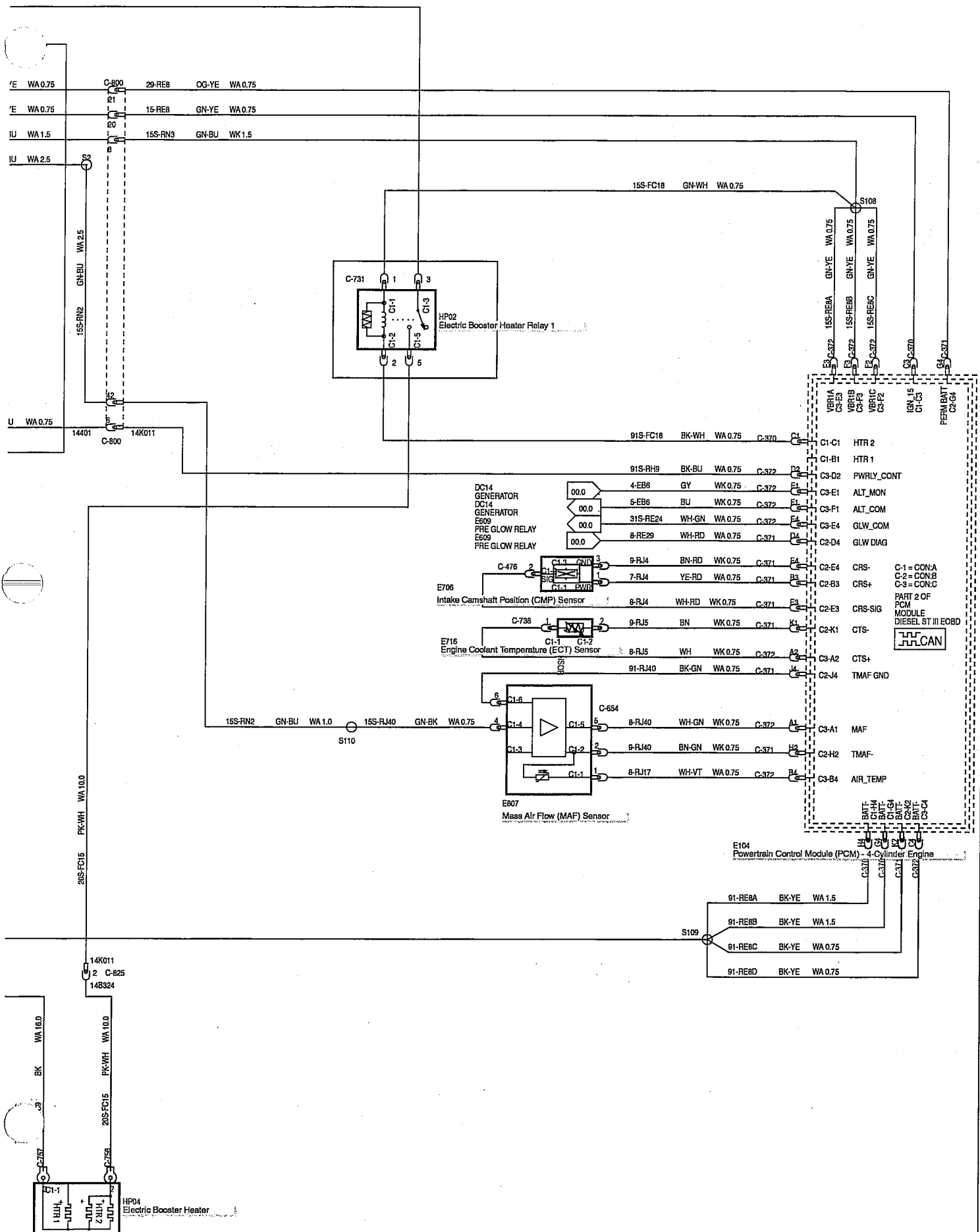
CONTENTS

PAGE

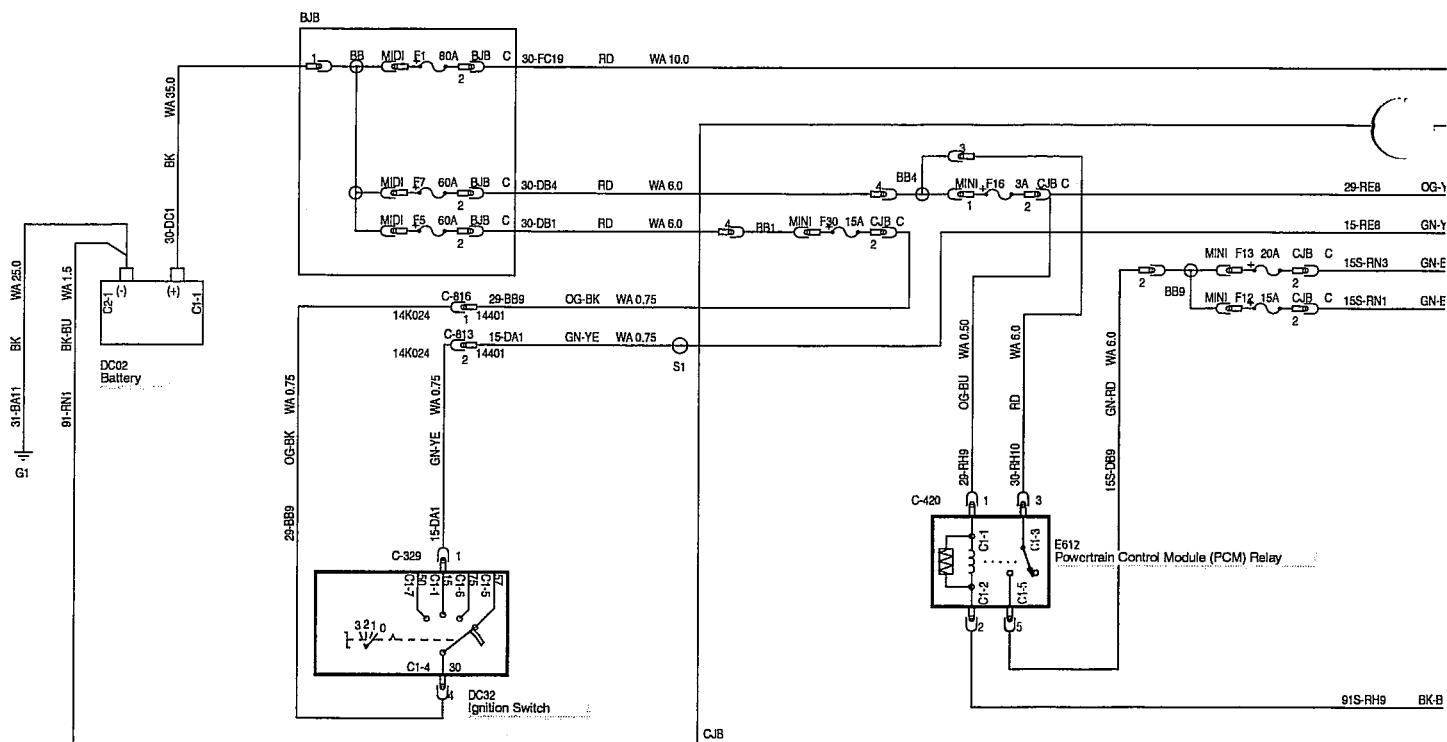
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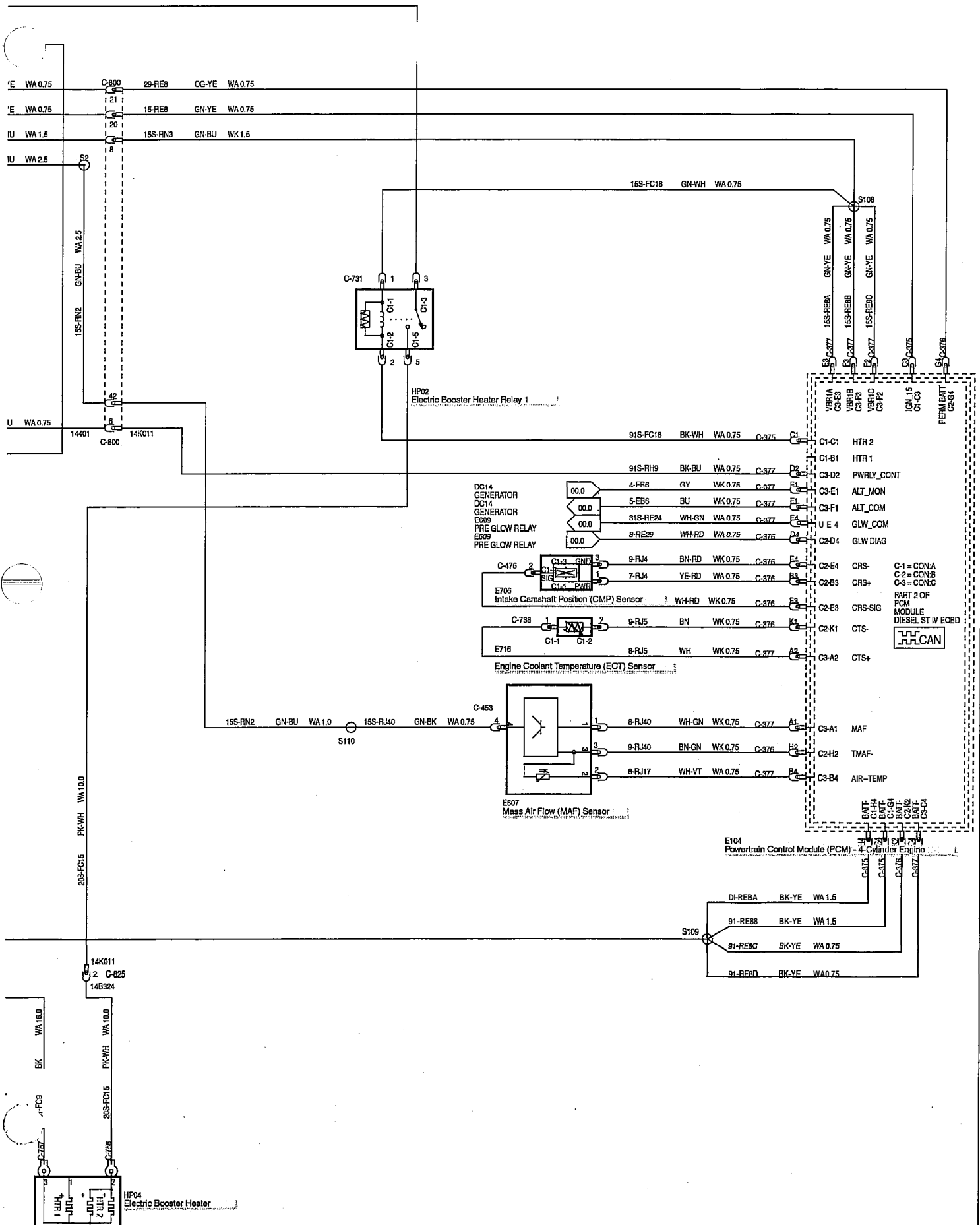
Electric Booster Heater — VIN Plate Emission Level Code: S.....	412-02B-2
Electric Booster Heater — 1.6L Duratorq-TDCi (DV) Diesel.....	412-02B-4
Electric Booster Heater — VIN Plate Emission Level Code: 7.....	412-02B-6











C

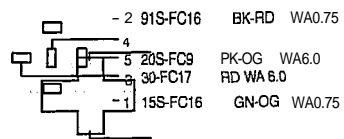
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C

SECTION 412-02C Auxiliary Climate Control

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Electric Booster Heater Relay 1.....	412-02C-2
Electric Booster Heater Relay 2.....	412-02C-3
Electric Booster Heater.....	412-02C-4
Electric Booster Heater.....	412-02C-5
Electric Booster Heater.....	412-02C-6
Electric Booster Heater.....	412-02C-7

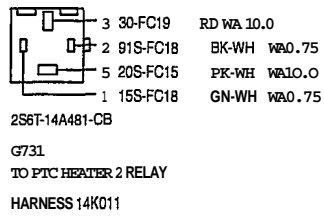


256T-14A481-BA

C-730

TO PTC HEATER 1 RELAY

HARNESS14K011





256T-14463-AA

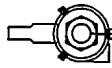
C-755

TO PTC HEATER (1)

HARNESS 140324

412-02C-5 Electric Booster Heater
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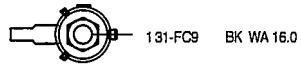
120S-FC15 PK-WH WA 10.0

2S6T-14463-GA

C-756

m PTC HEATER (2)

HARNESS148324



2S6T-14463-HA
C-757
TO PTC HEATER (3)
HARNES14B324

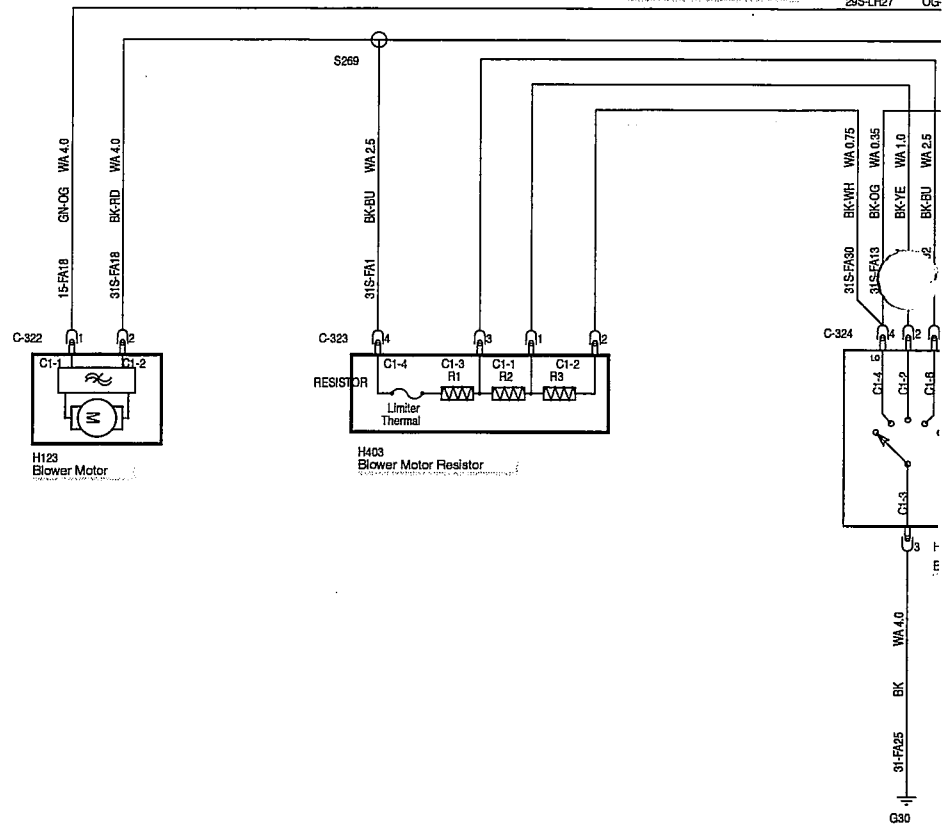


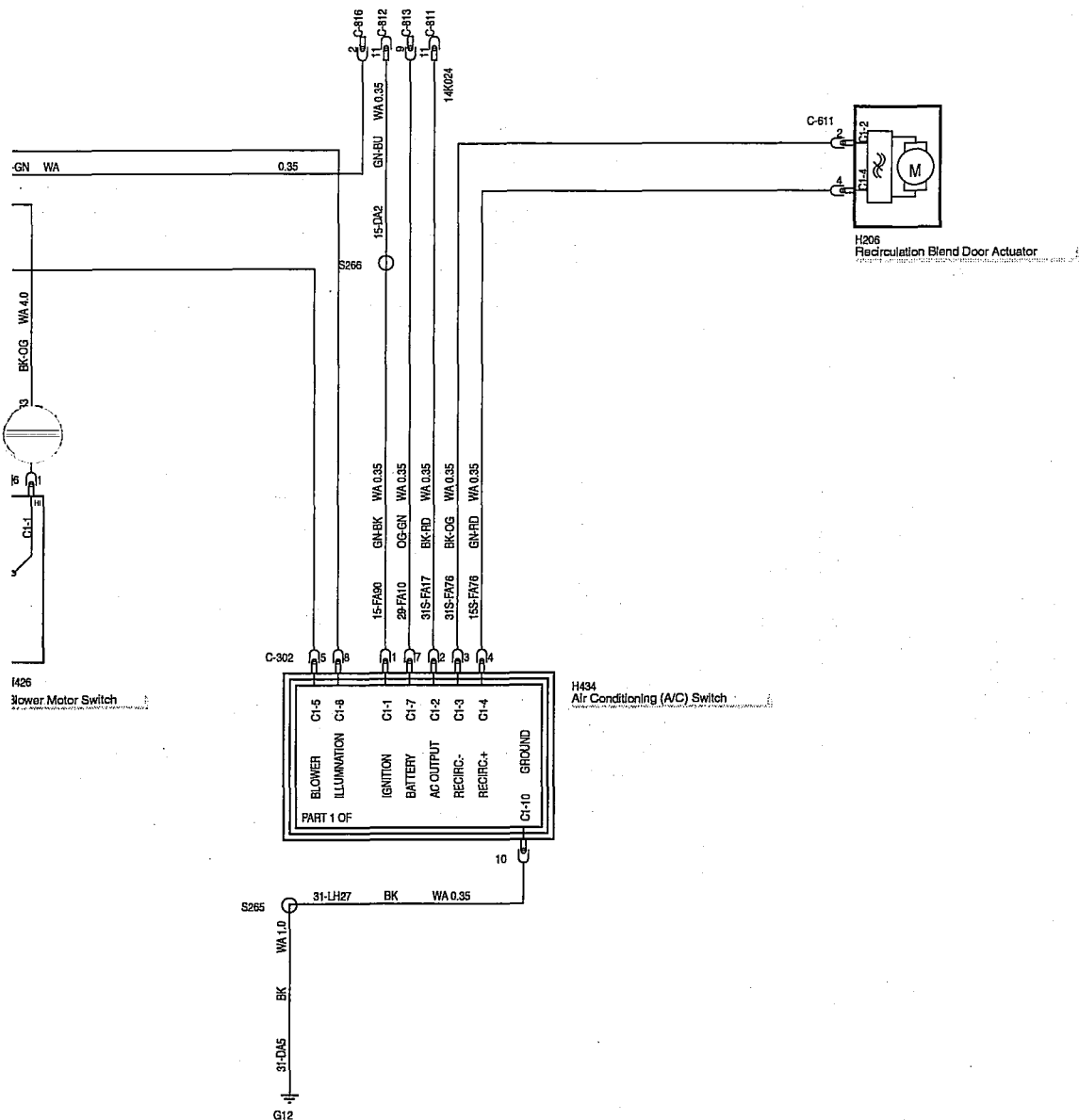
SECTION 412-03 Air Conditioning

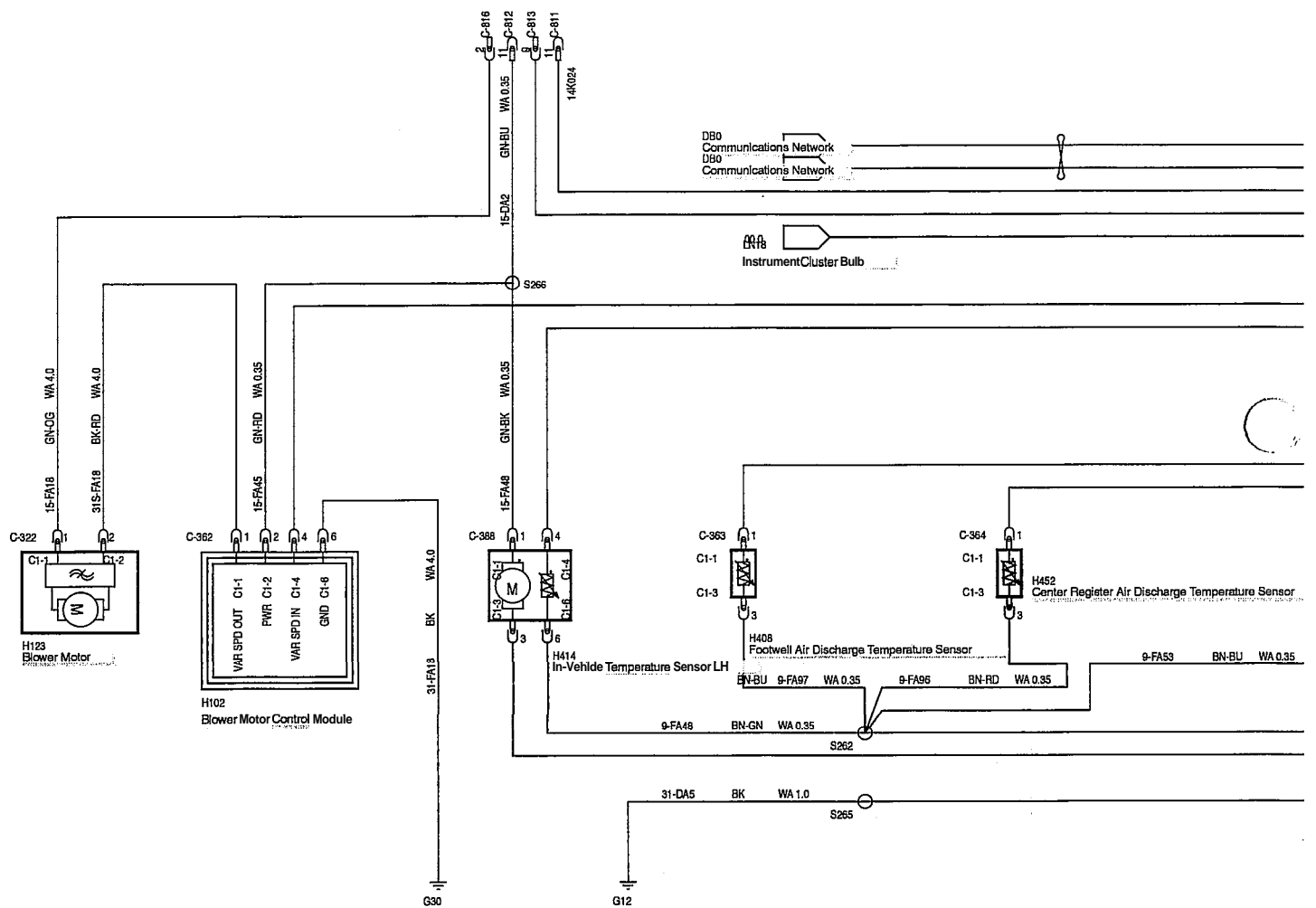
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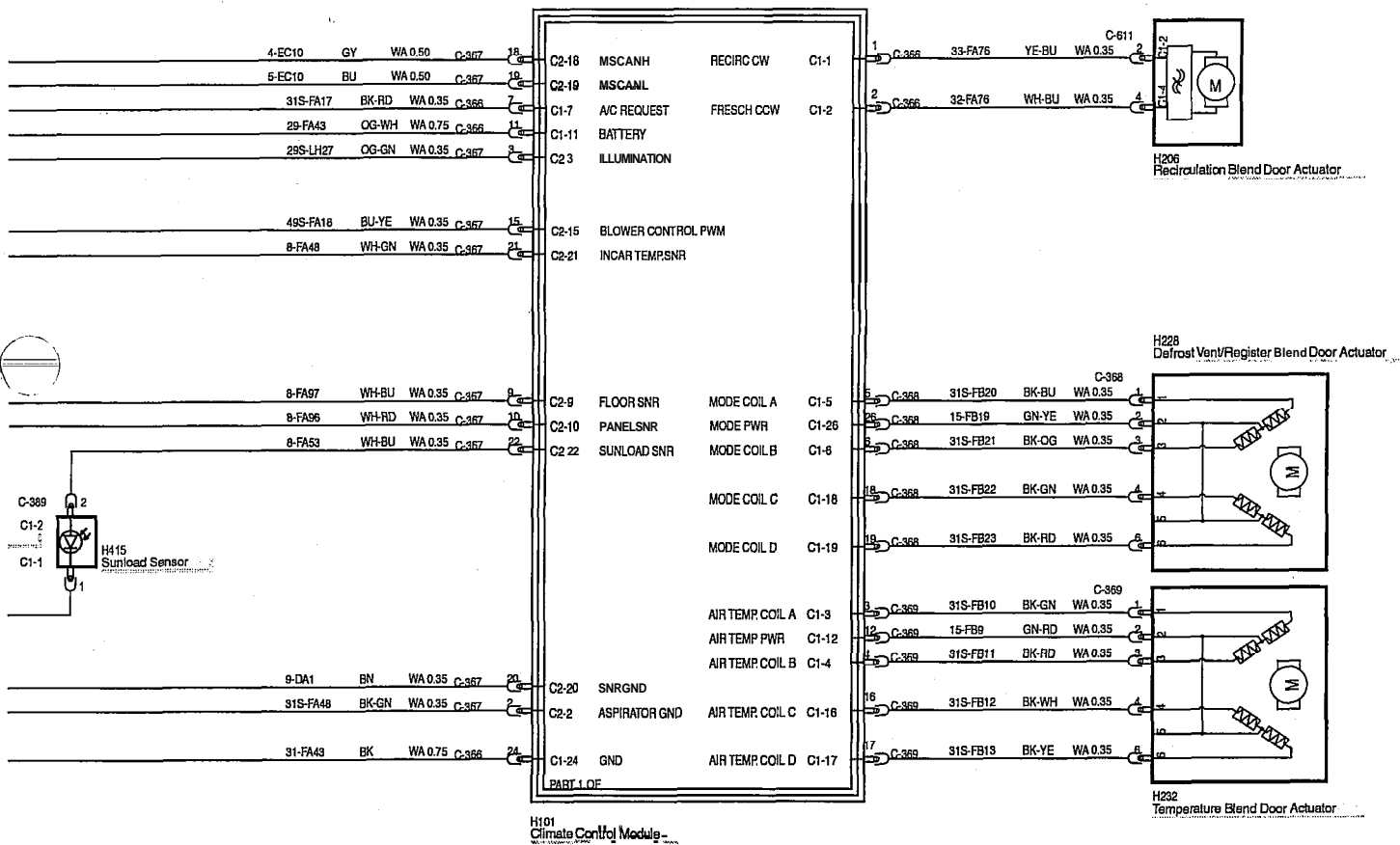
CONTENTS	PAGE
SCHEMATICS	
Air Conditioning.....	412-03-2
Air Conditioning — Vehicles With: Automatic Temperature Control.....	412-03-4
Air Conditioning — 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	412-03-6
Air Conditioning — 1.4L Duratorq-TDCi (DV) Diesel, VIN Plate Emission Level Code: S..	412-03-8
Air Conditioning — 1.4L Duratorq-TDCi (DV) Diesel, VIN Plate Emission Level Code: 7...	412-03-10
Air Conditioning — 1.6L Duratec-16V (Sigma), Vehicles With: 4-Speed Automatic Transmission (AW81-40).....	412-03-12
Air Conditioning — 1.6L Duratorq-TDCi (DV) Diesel.....	412-03-14
Air Conditioning — 2.0L Duratec-ST (MI4).....	412-03-16

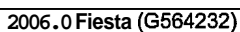
LN18
Instrument Cluster Bulb
29S-LH27 OG



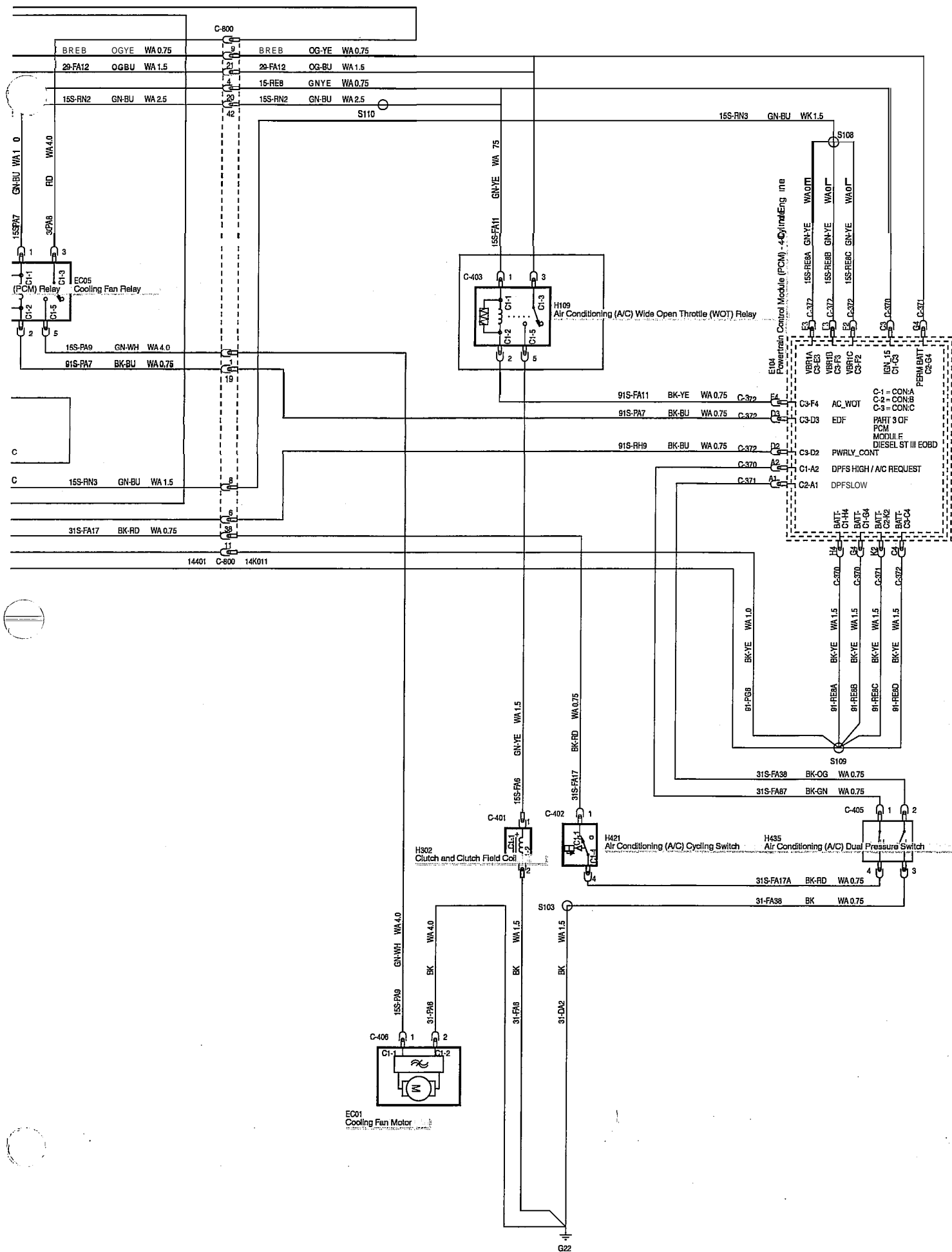


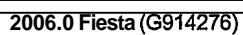


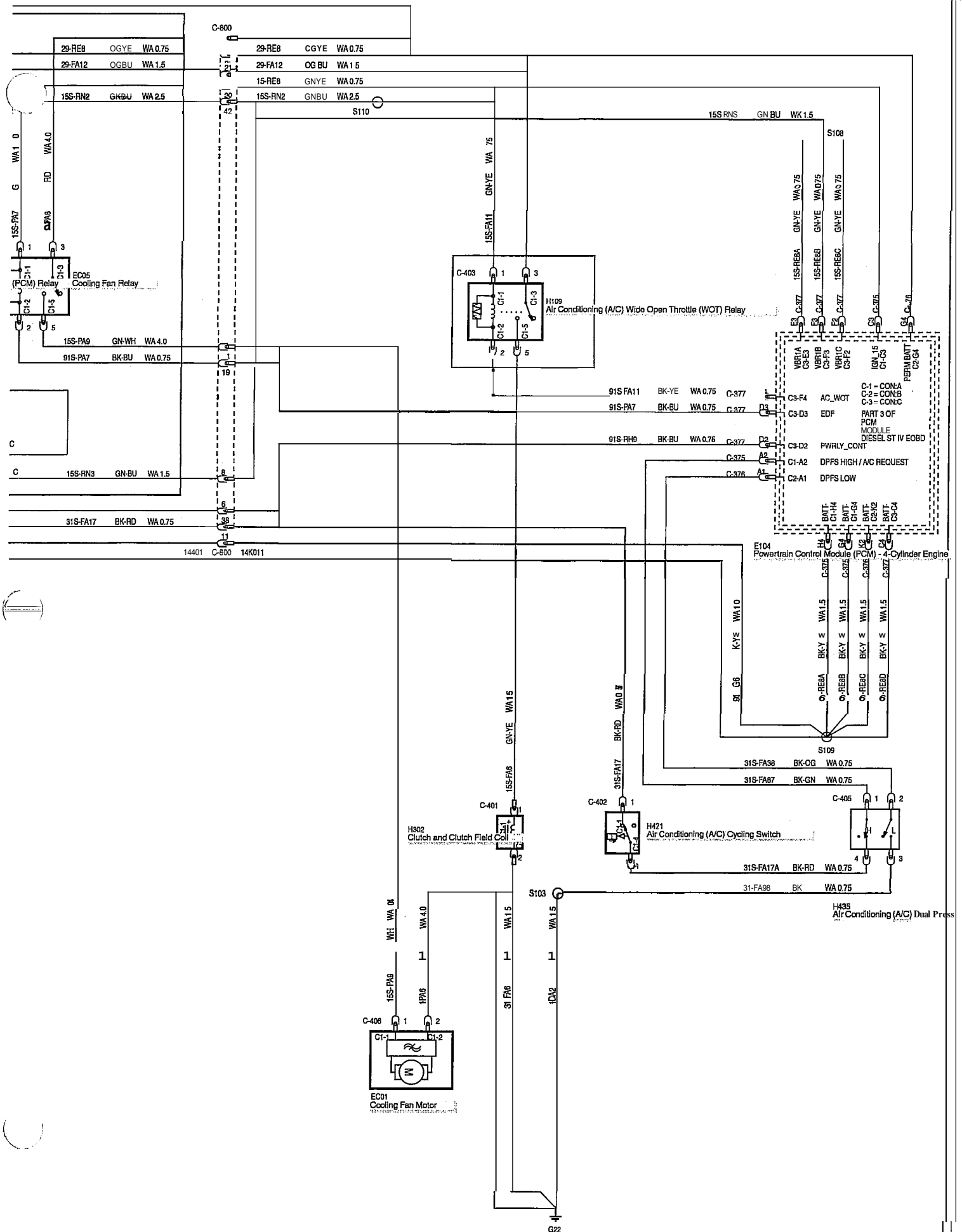




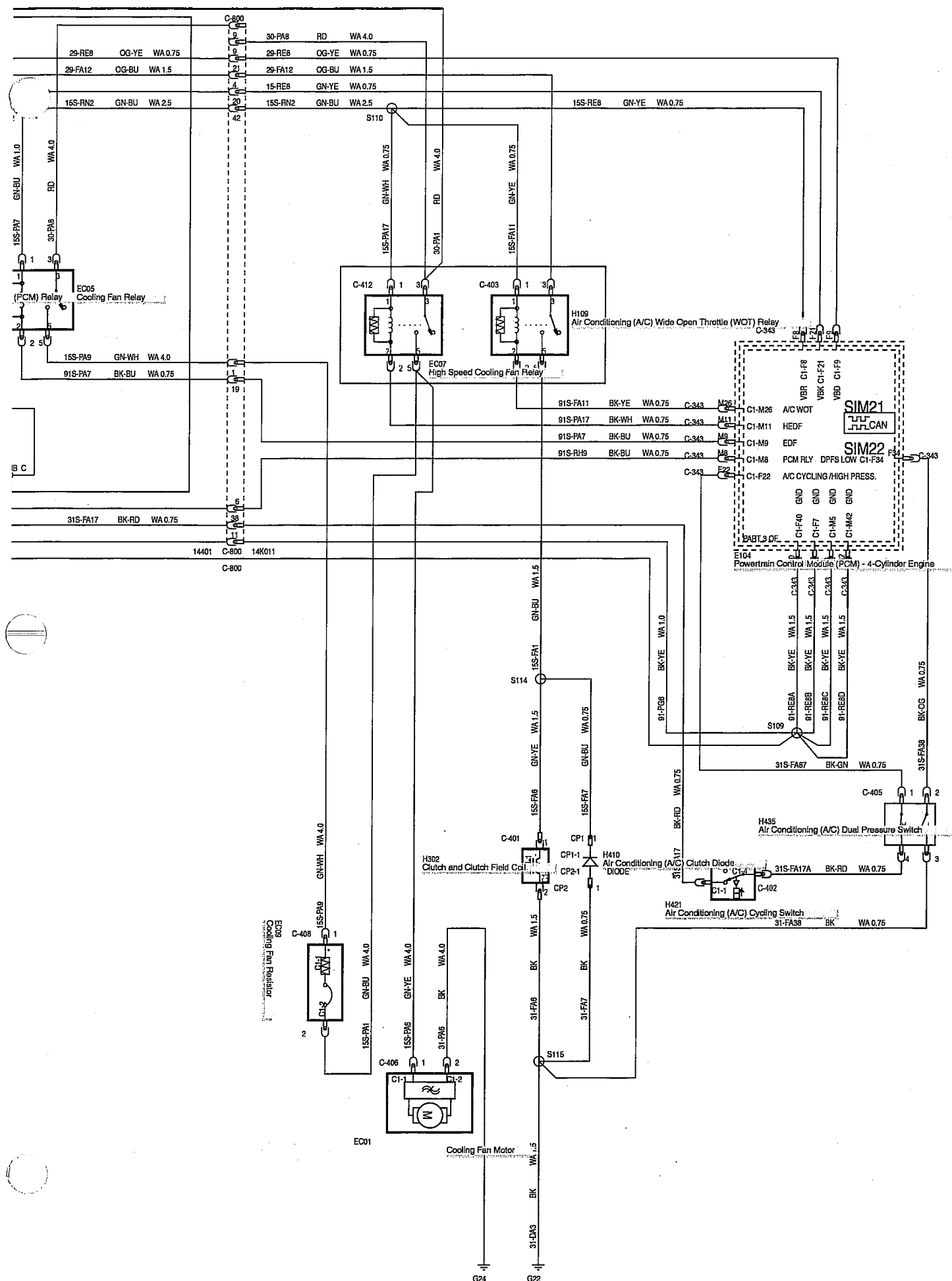


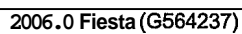


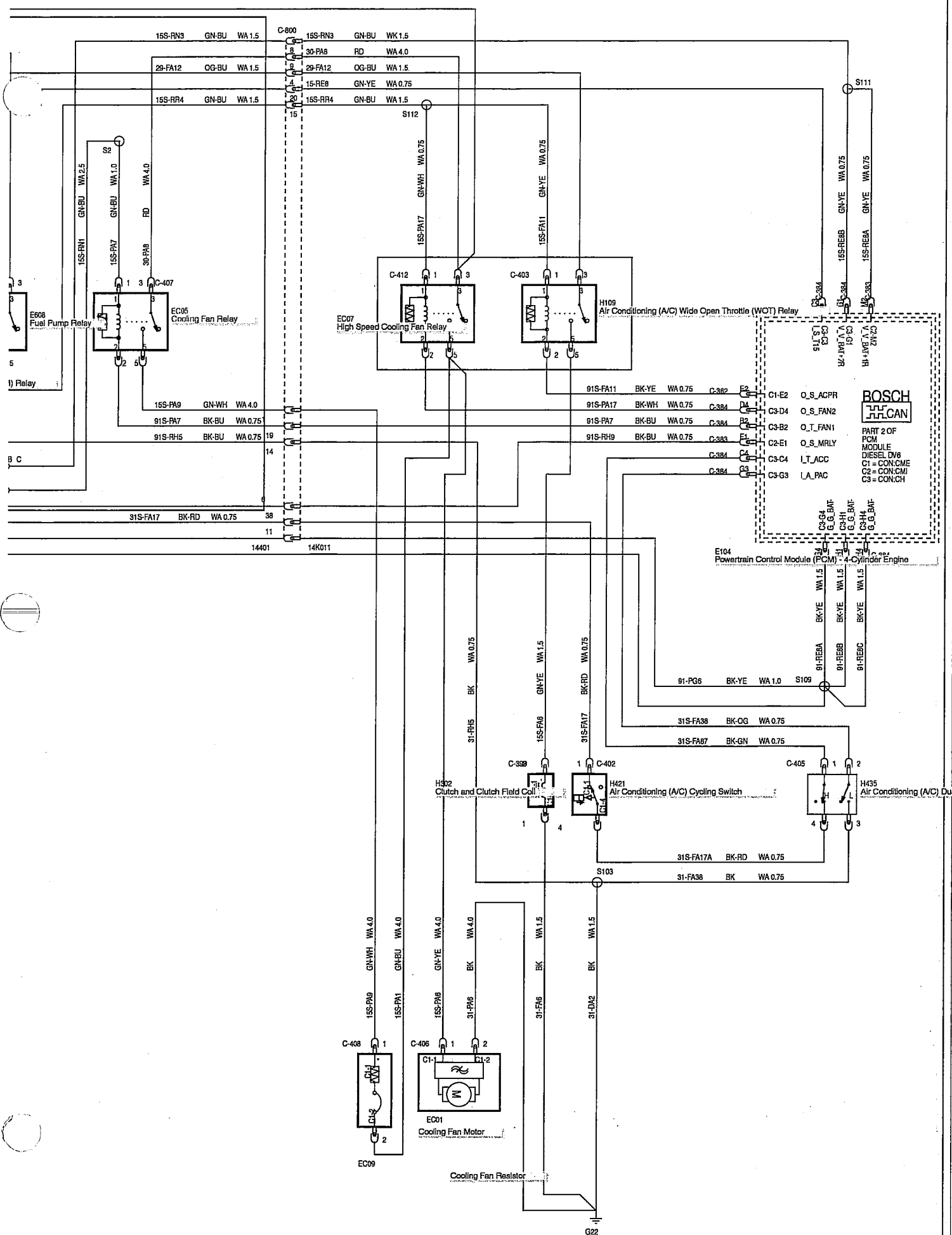


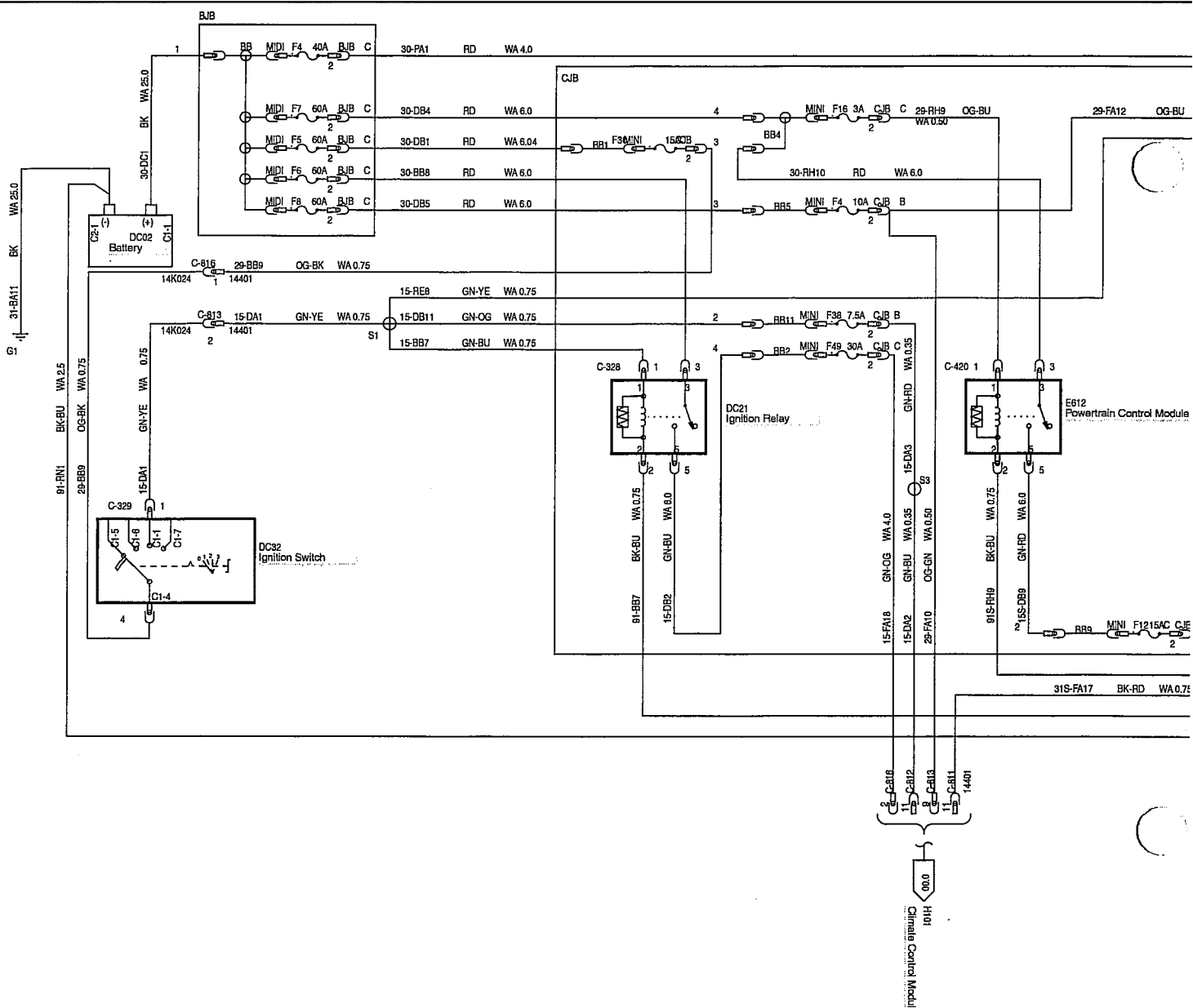














SECTION 413-00 Instrument Cluster and Panel Illumination

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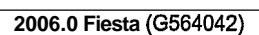
CONTENTS

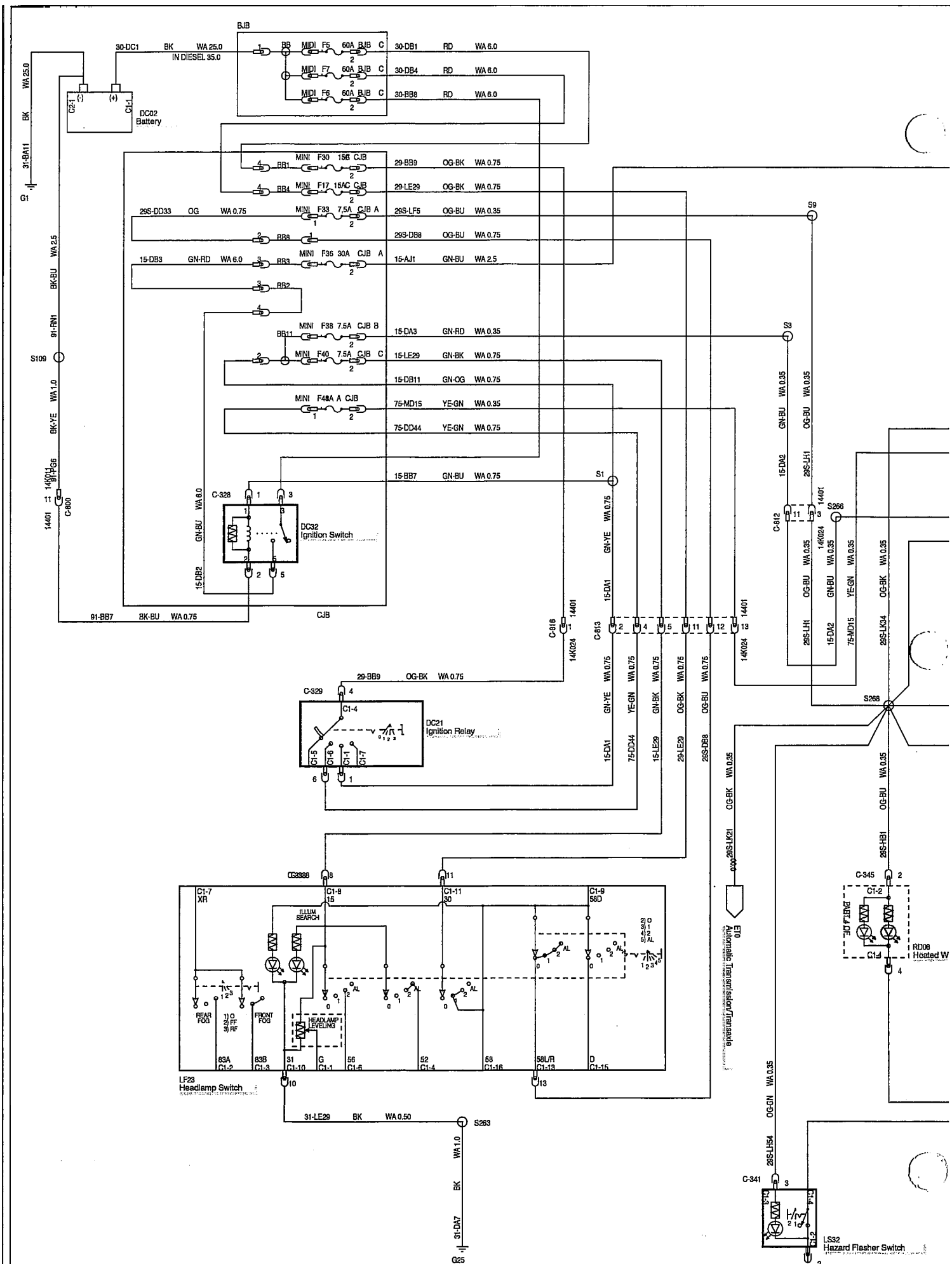
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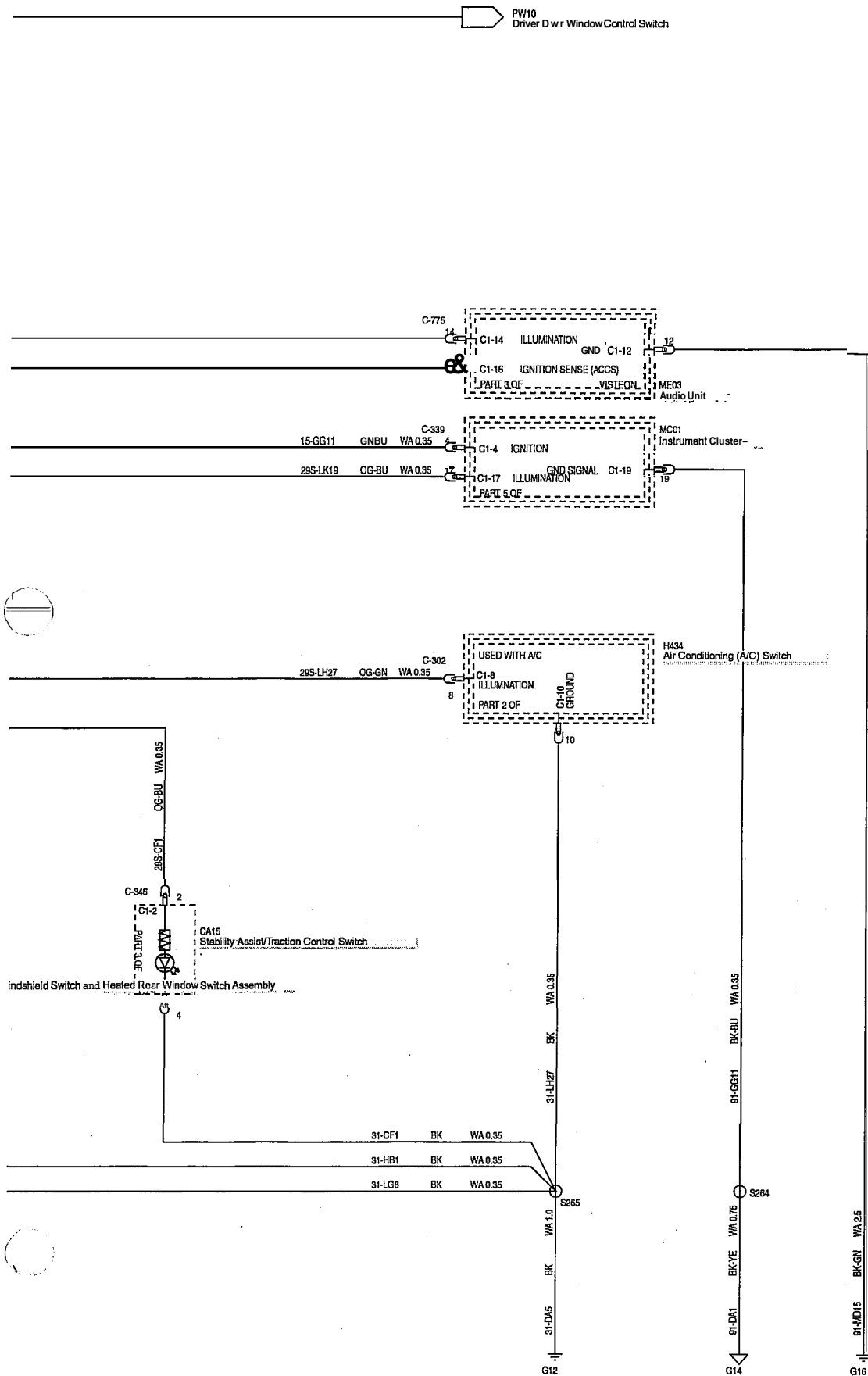
SCHEMATICS

Instrument Cluster and Panel Illumination — Vehicles With: Automatic Temperature Control.....	413-00-2
Instrument Cluster and Panel Illumination — Vehicles With: Air Conditioning.....	413-00-4
Instrument Cluster and Panel Illumination— Vehicles With: Navigation System, Vehicles Without: Air Conditioning.....	413-00-?
Instrument Cluster and Panel Illumination — 2.0L Duratec-ST (M14), Vehicles With: Automatic Temperature Control.....	413-00-7







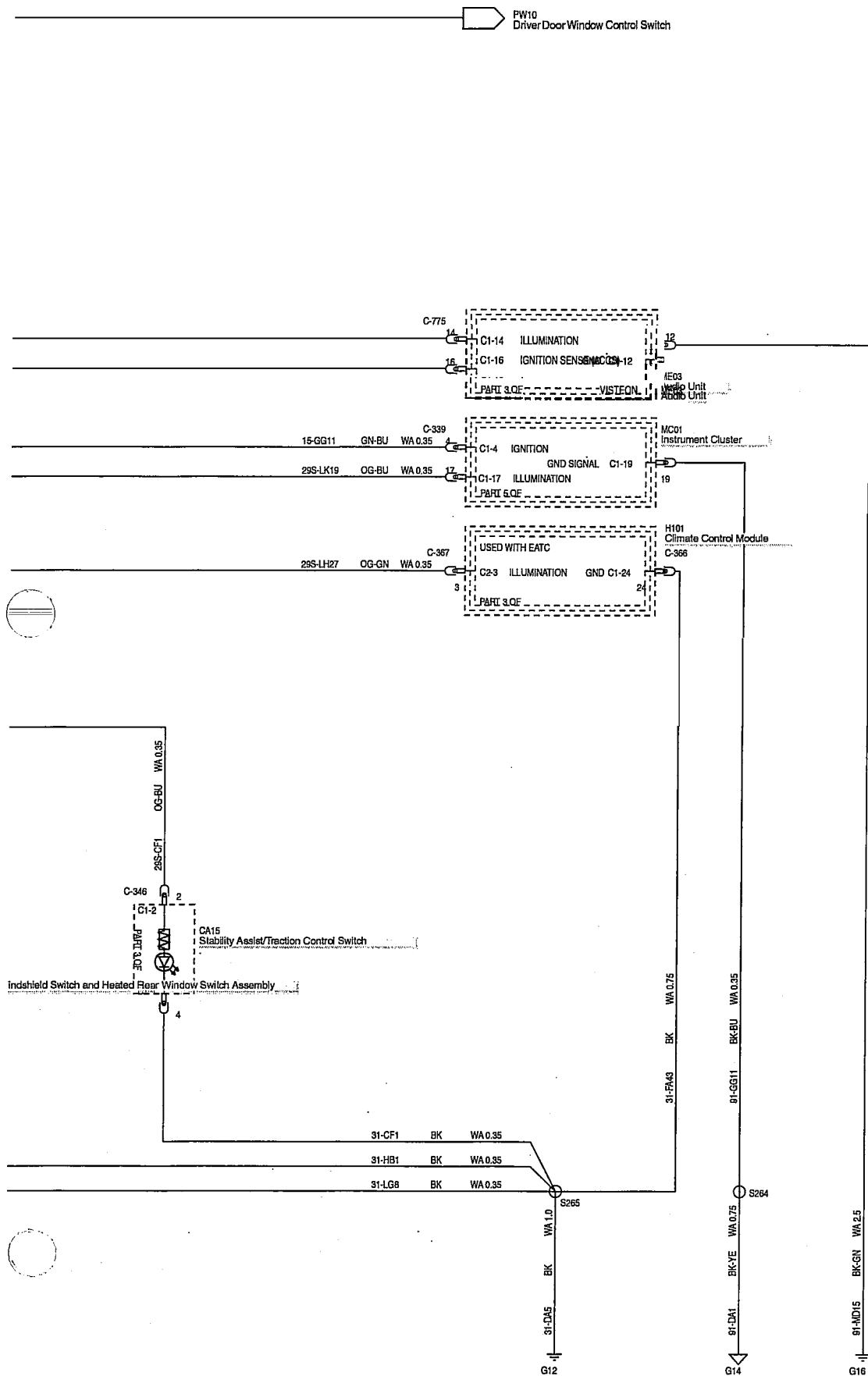


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NM1 present for BATTERY

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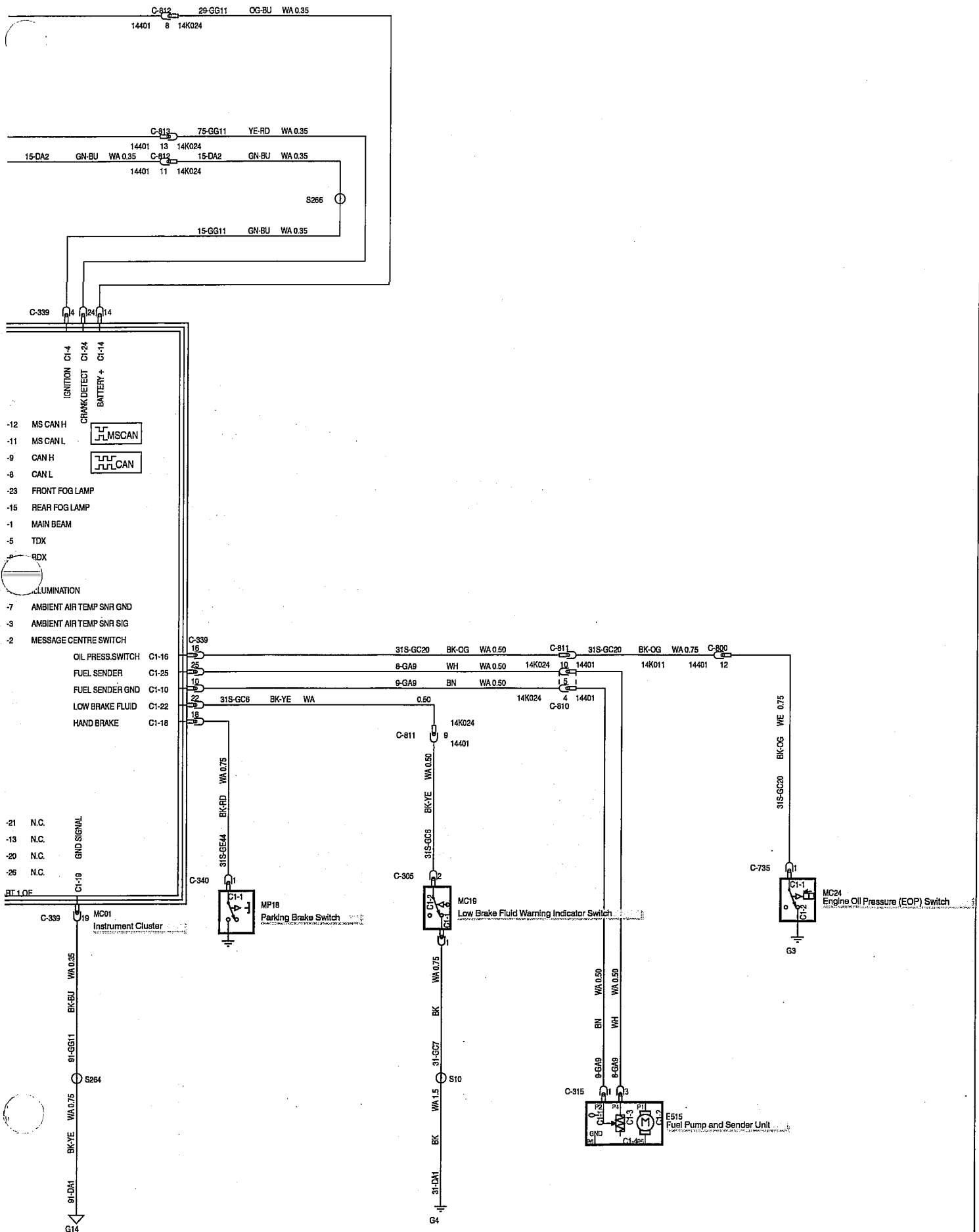
SECTION 413-01 Instrument Cluster

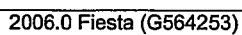
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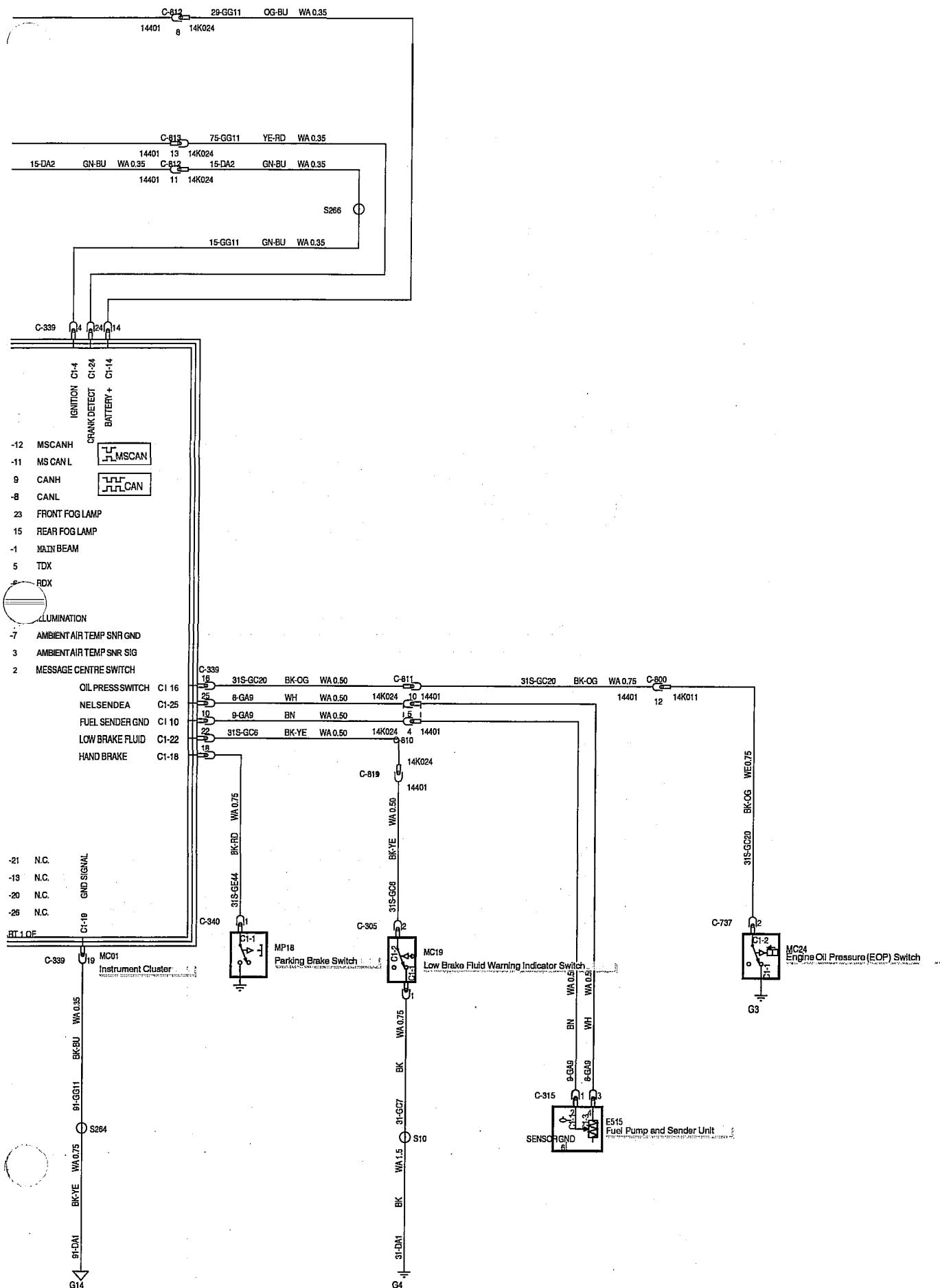
CONTENTS	PAGE
SCHEMATICS	
Instrument Cluster — 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	413-01-2
Instrument Cluster — 1.3L Duratec-8V (Rocam).....	413-01-4
Instrument Cluster — 1.4L Duratorq-TDCi (DV) Diesel/1.6L Duratorq-TDCi (DV) Diesel...	413-01-6
Instrument Cluster — 2.0L Duratec-ST (MI4).....	413-01-8
CONNECTORS	
Instrument Cluster.....	413-01-10

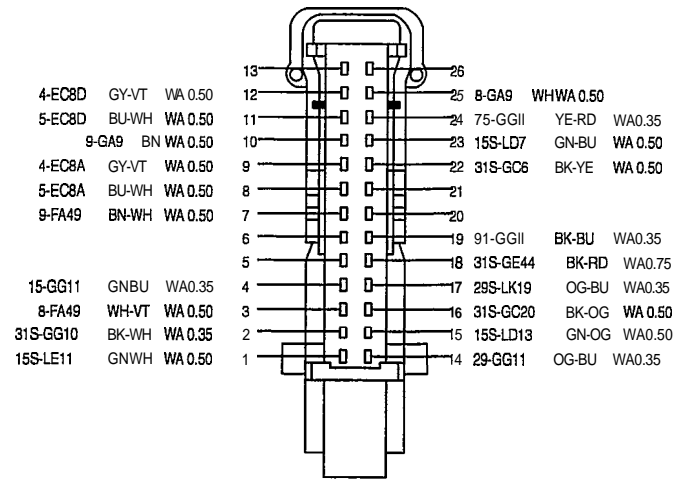










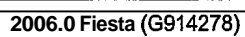


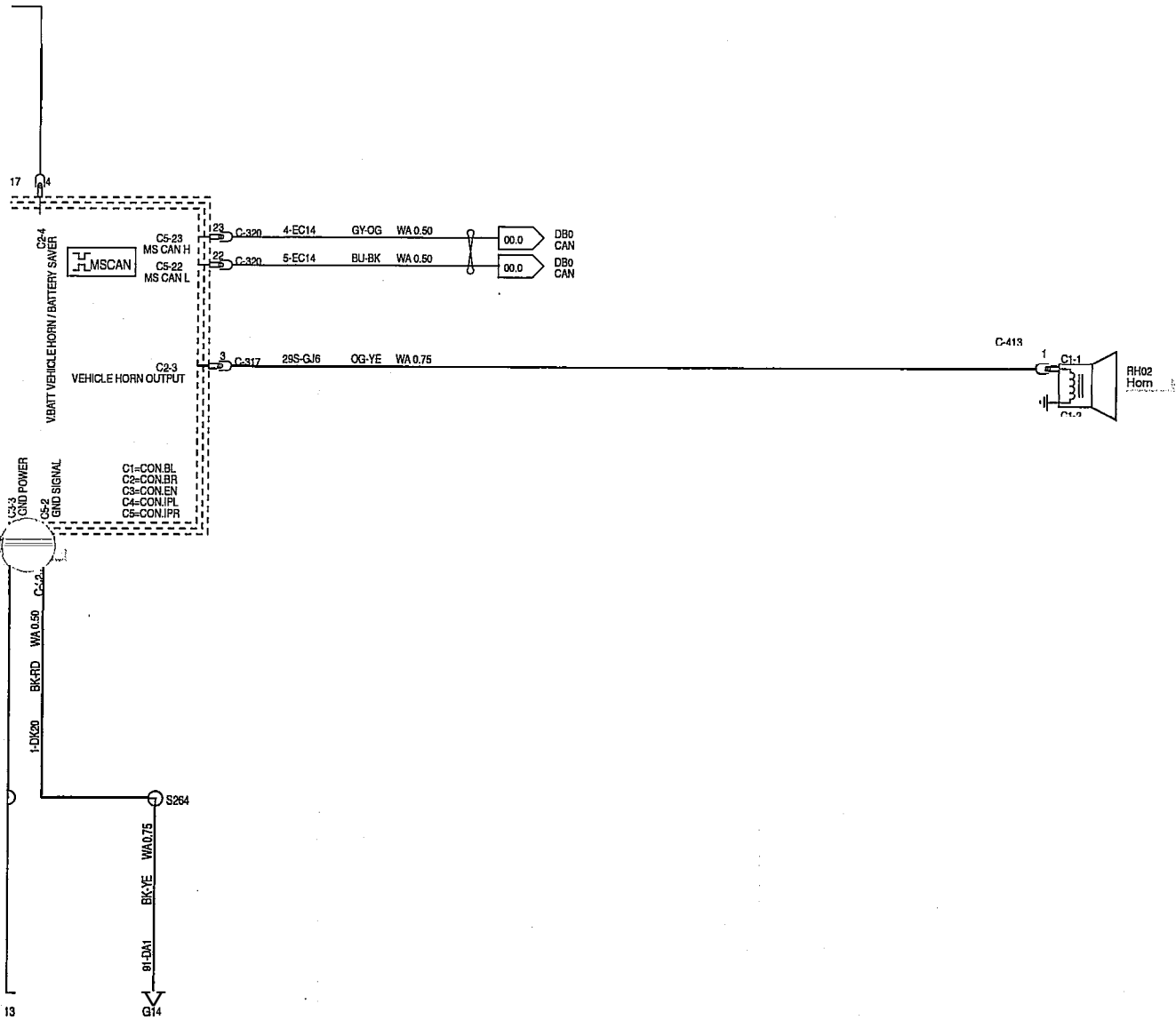
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C-339
TO ELECTRONICINSTRUMENTCLUSTER
HARNESS 14K024

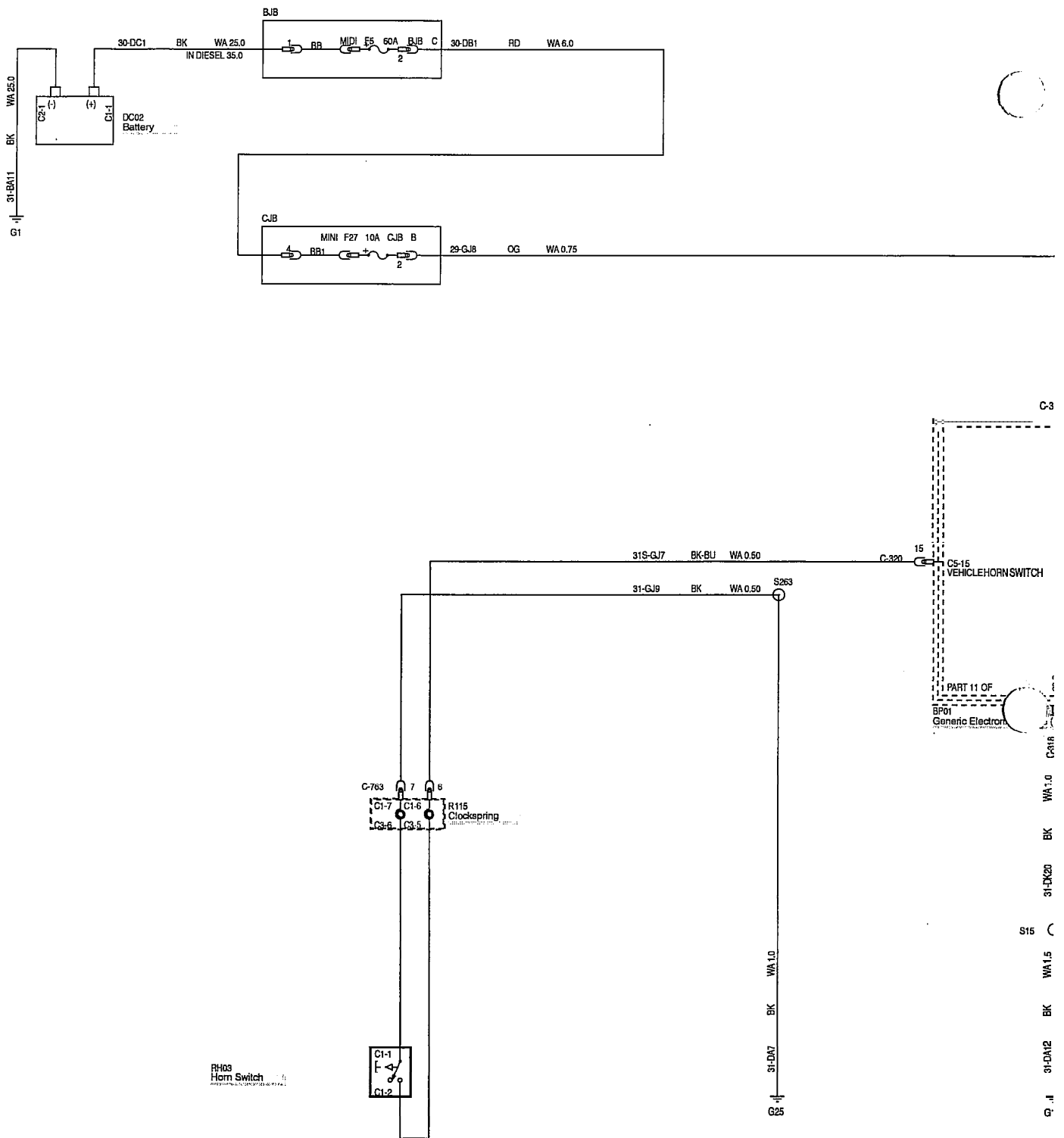
SECTION 413-06 Horn

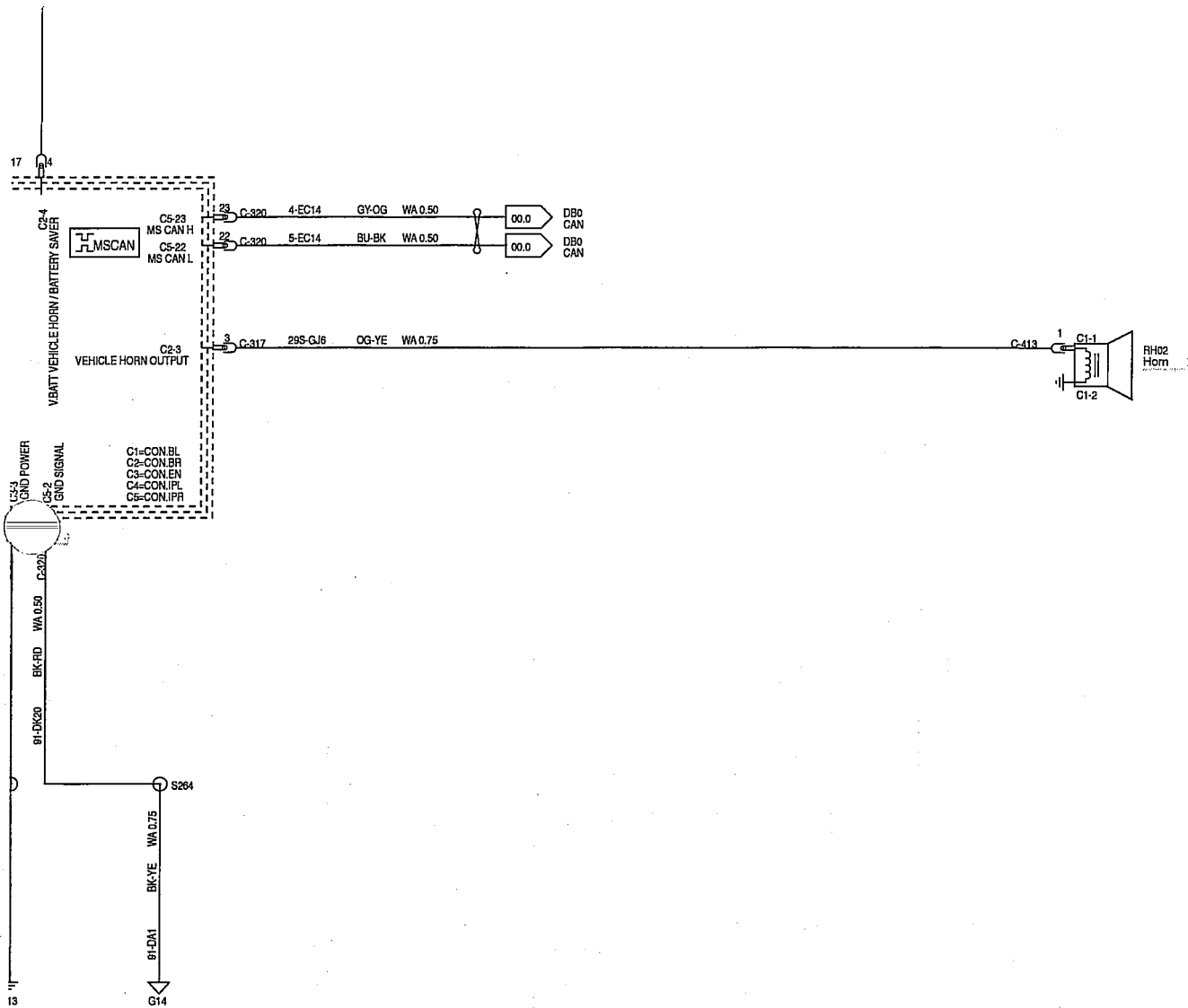
VEHICLE APPLICATION:2006.0 Fiesta

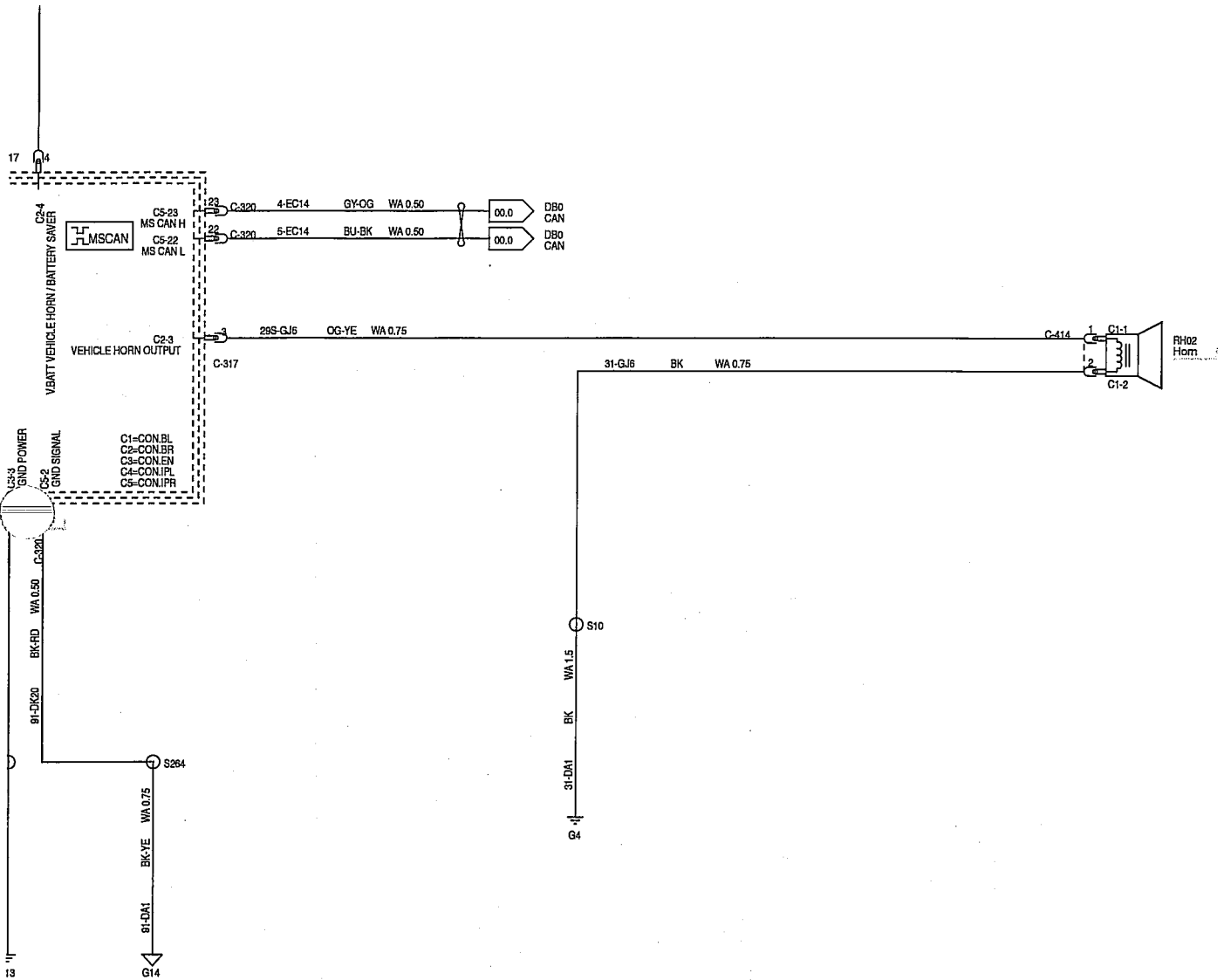
CONTENTS	PAGE
SCHEMATICS	
Horn — Vehicles With: Stability Assist.....	413-06-2
Horn — Vehicles Without: Stability Assist.....	413-06-4
Horn — 1.6L Duratorq-TDCi (DV) Diesel, Vehicles With: Stability Assist.....	413-06-6
Horn — 1.6L Duratorq-TDCi (DV) Diesel, Vehicles Without: Stability Assist.....	413-06-8
CONNECTORS	
Horn.....	413-06-10
Horn.....	413-06-11
Horn.....	413-06-12

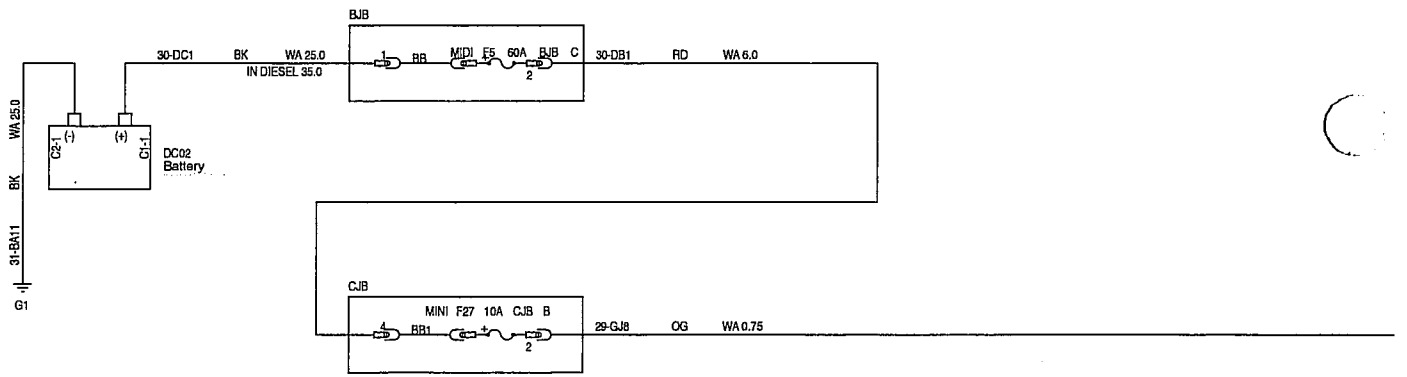




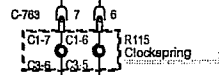








RH03
Horn Switch



31S-GJ7 BK-BU WA 0.50

31-GJ9 BK WA 0.50

S263

C-320

15

C5-15
VEHICLE HORN SWITCH

PART 11 OF
BP01
Generic Electronics

31-DA7 BK WA 1.0
G25

C-3

C-318

WA 1.0

BK

31-DK20

S15

WA 1.5

BK


31-DA12

G1



41 3-06-10 Horn

Information not available at this time

 1 28S-GJ6 OG-YE WA0.75

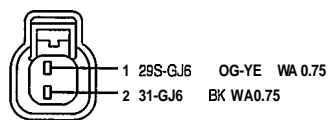
81AG-14488-ACA

C-413

TO HORN

HARNESS14401





XR3T-14A464-AA

G414

TO HORN

HARNESS14401

SECTION 413-08 Information and Message Center

VEHICLE APPLICATION:2006.0 Fiesta

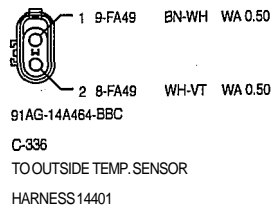
CONTENTS

PAGE

CONNECTORS

Outside Air Temperature Sensor..... 413-08-2

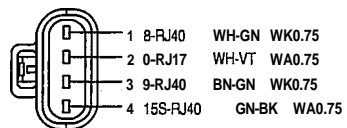




SECTION 414-01 Battery, Mounting and Cables

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
CONNECTORS	
Battery Saver Relay.....	414-01-2



3M5T-14A464-FDB

C-453

TO MASS AIR FLOW SENSOR (DIESEL IVECOBD)

HARNESS 14K011

SECTION 414-02 Generator and Regulator

VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

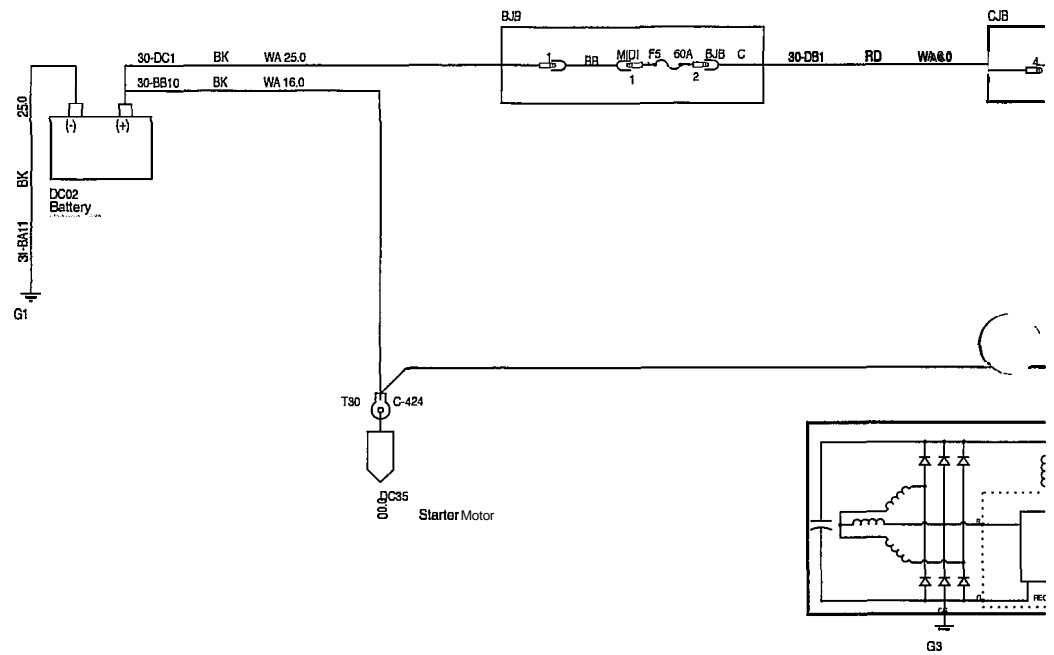
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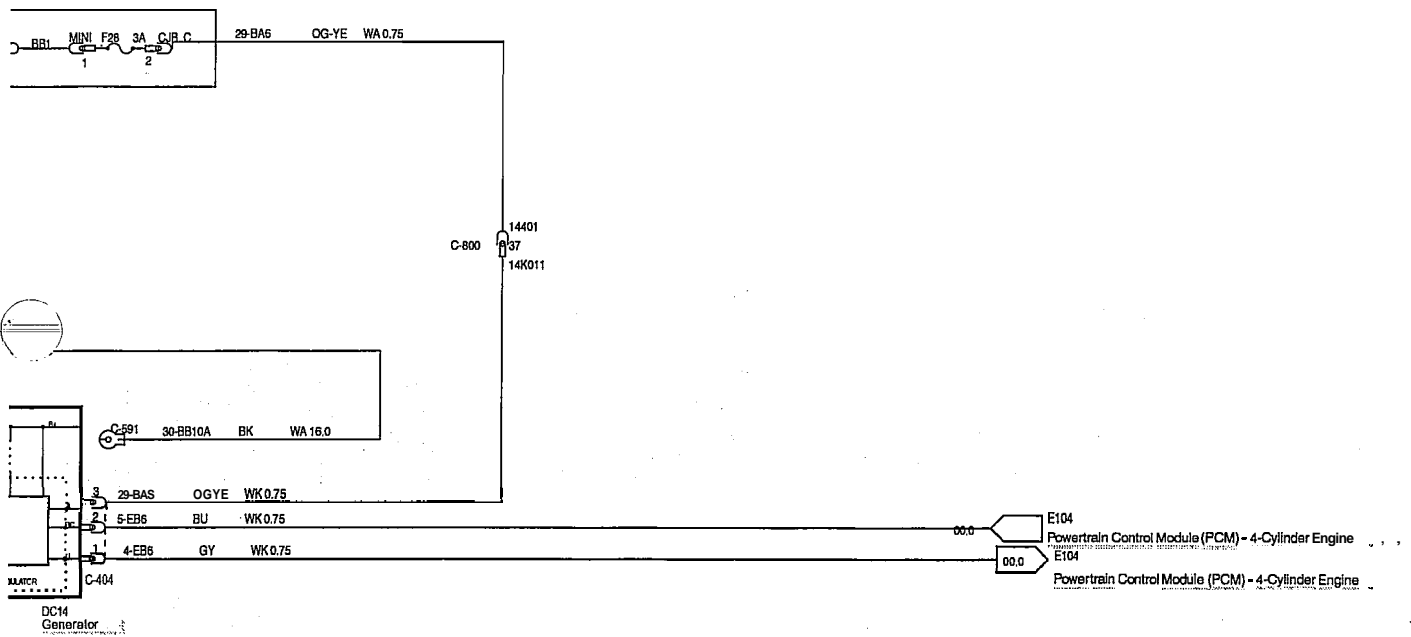
SCHEMATICS

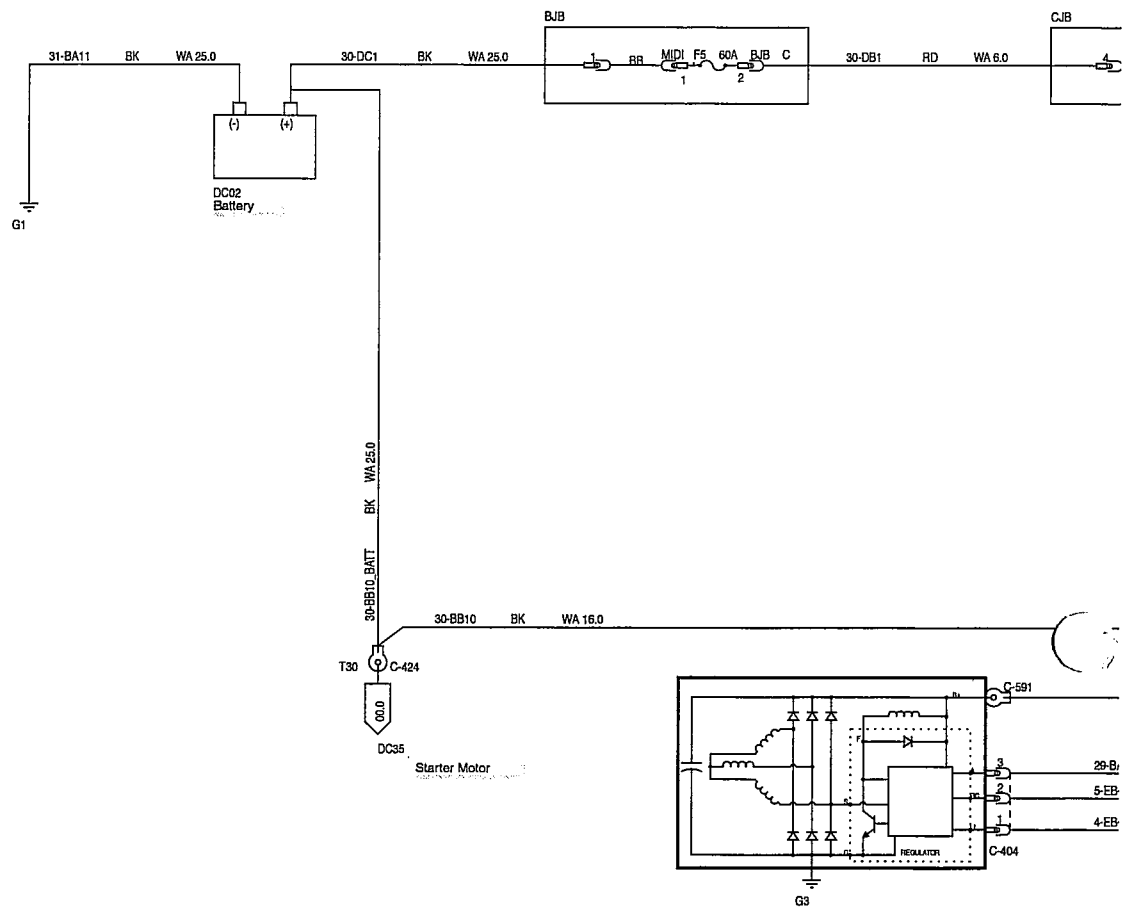
Charging System — 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	414-02-2
Charging System — 1.4L Duratorq-TDCi (DV) Diesel/1.6L Duratorq-TDCi (DV) Diesel....	414-02-4

CONNECTORS

Generator.....	414-02-6
Generator — 2.0L Duratec-ST (M14).....	414-02-7
Generator — 1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma).....	414-02-8

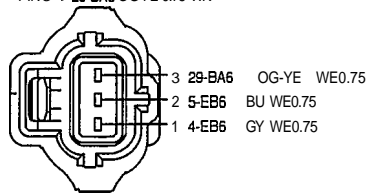








PIN 1 => 4-EB6 GY 0.75 WK
PIN 2 => 5-EB6 BU 0.75WK
PIN 3 => 29-BA6 OGYE 0.75 WK




F6DB-14A464-AGA(XXX)


C-404

TO ALTERNATOR

HARNESS14K011 OR 14300

 1 30-BB10B RD WE25.0
F65B-14463-CA
C-592
TO ALTERNATOR(90A ST150)
HARNESS 14300

PIN1 => 30-BB10 BK 25.0 WA

 1 30-BB10 BK WA16.0

F65B-14463-DA

C-591

TO ALTERNATOR (70/90A SIGMA / 90A SOHC DIESEL)

HARNESS 14300

SECTION 415-01A Audio Unit

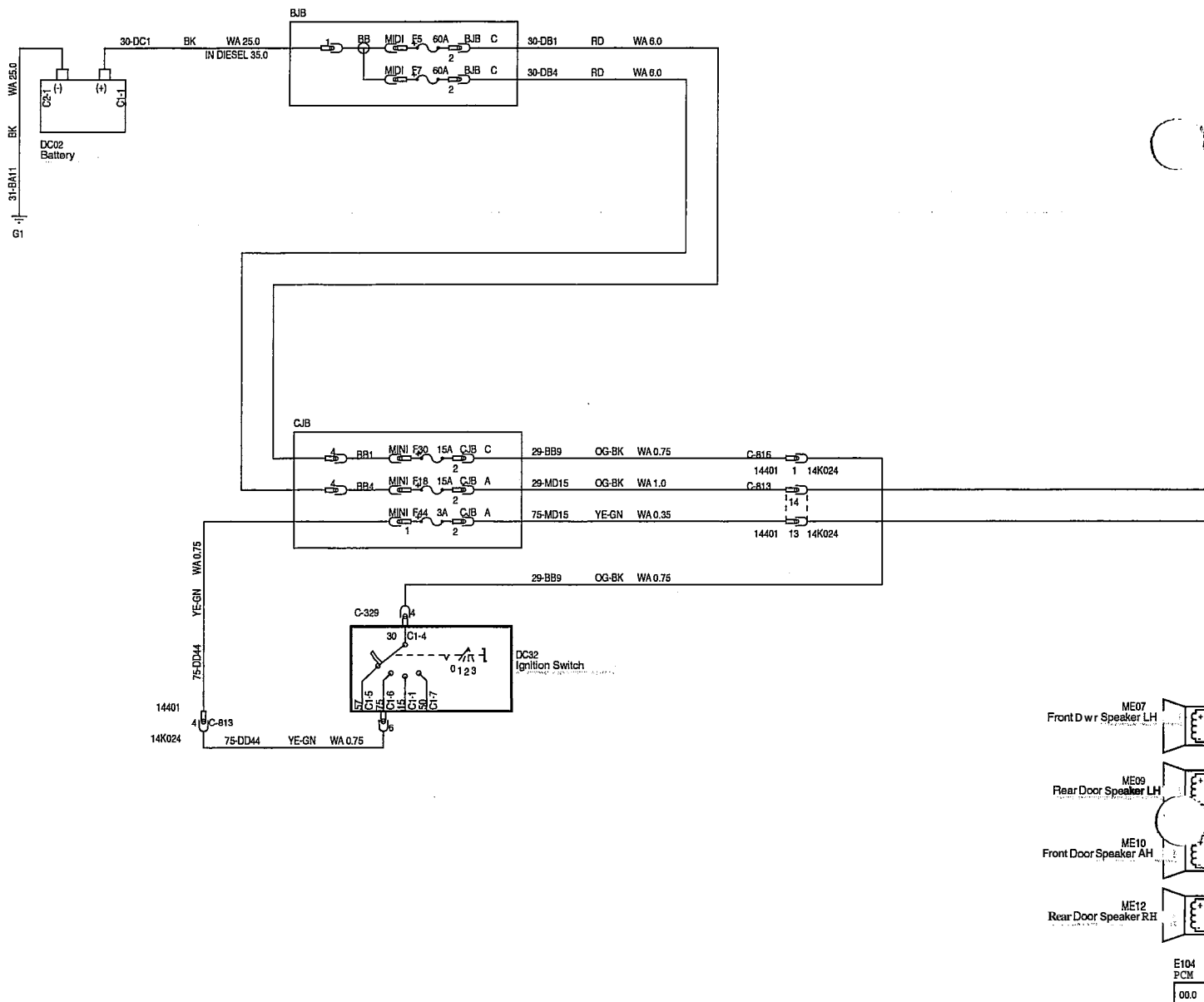
VEHICLE APPLICATION: 2006.0 Fiesta

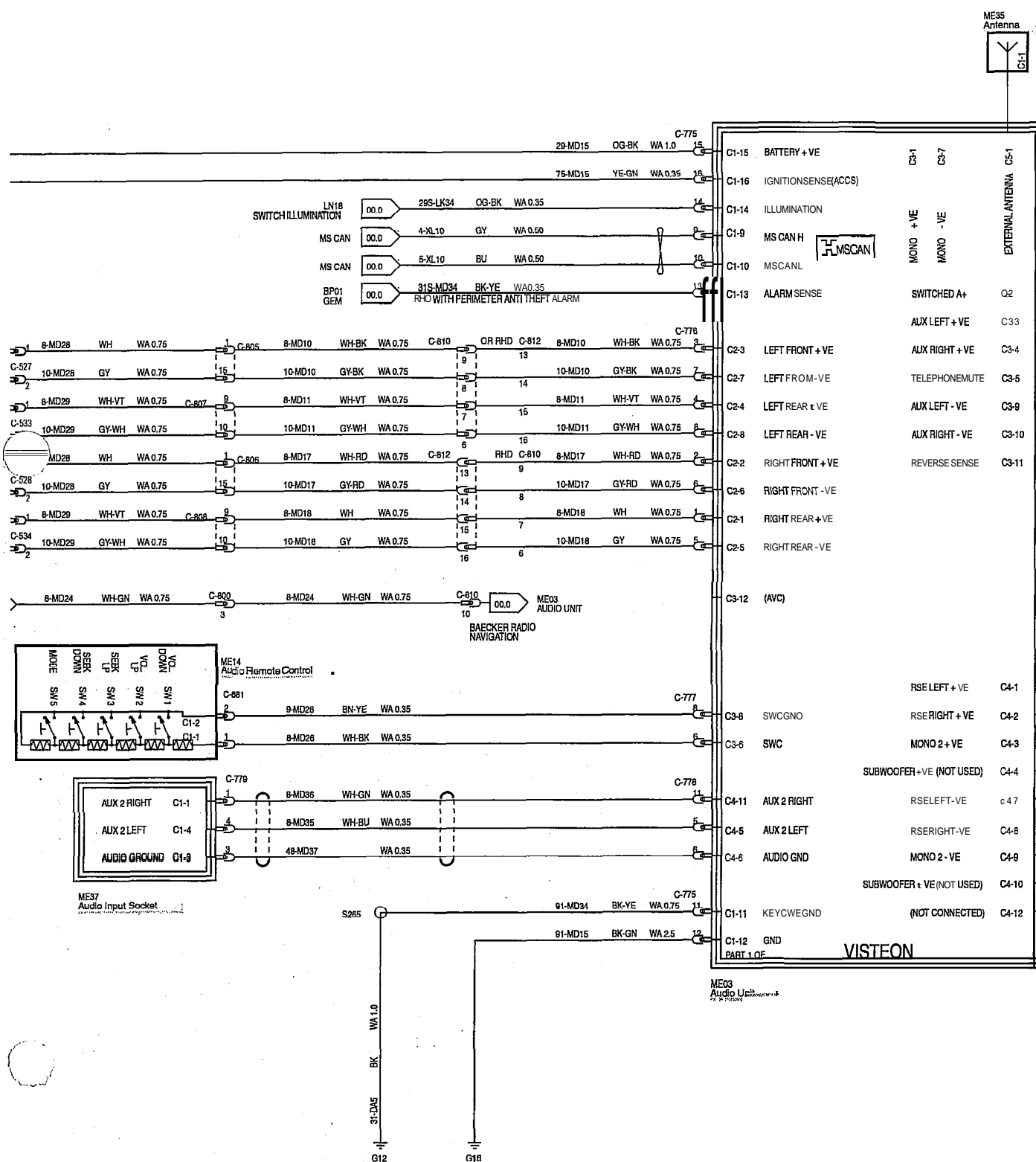
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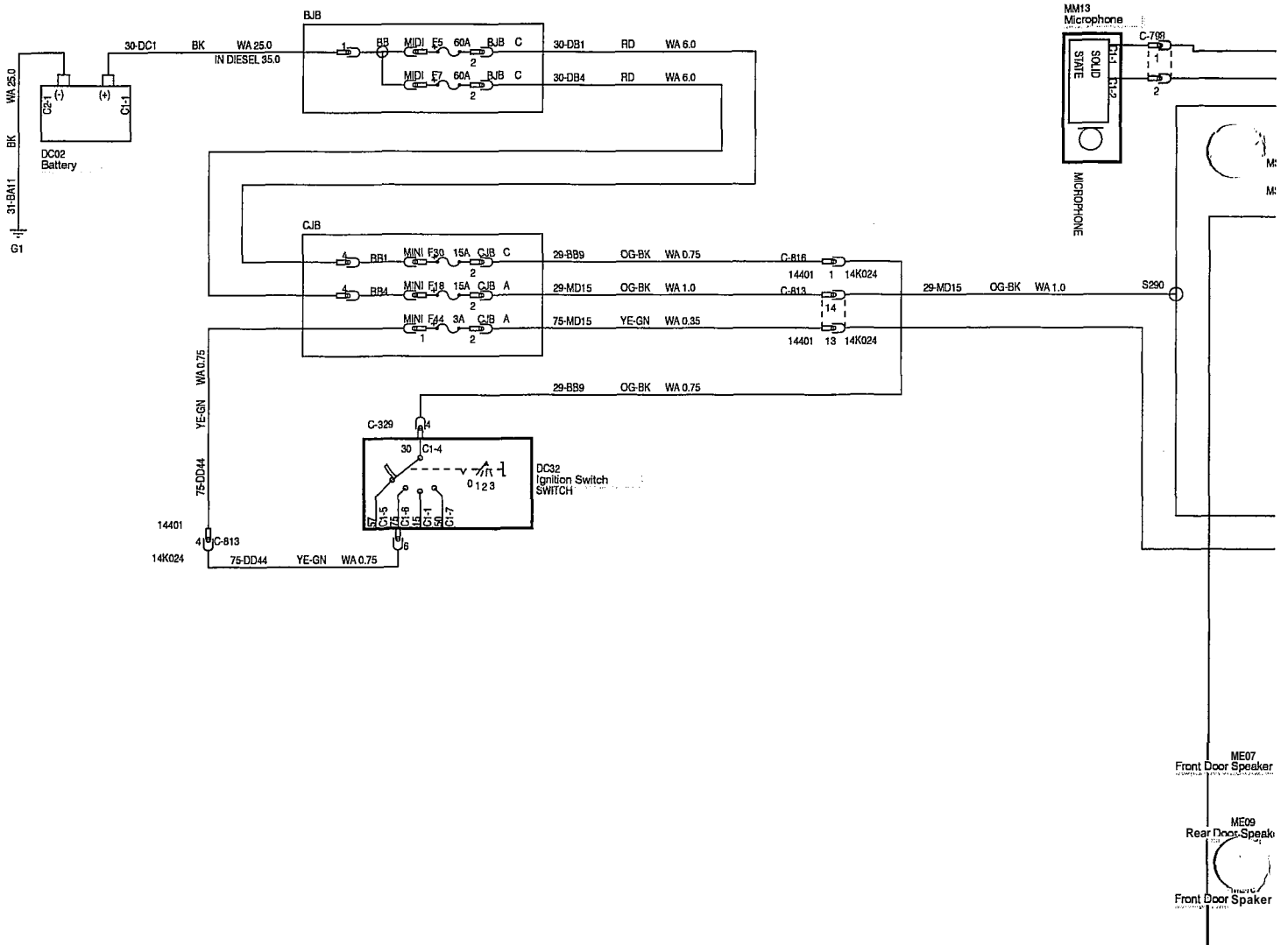
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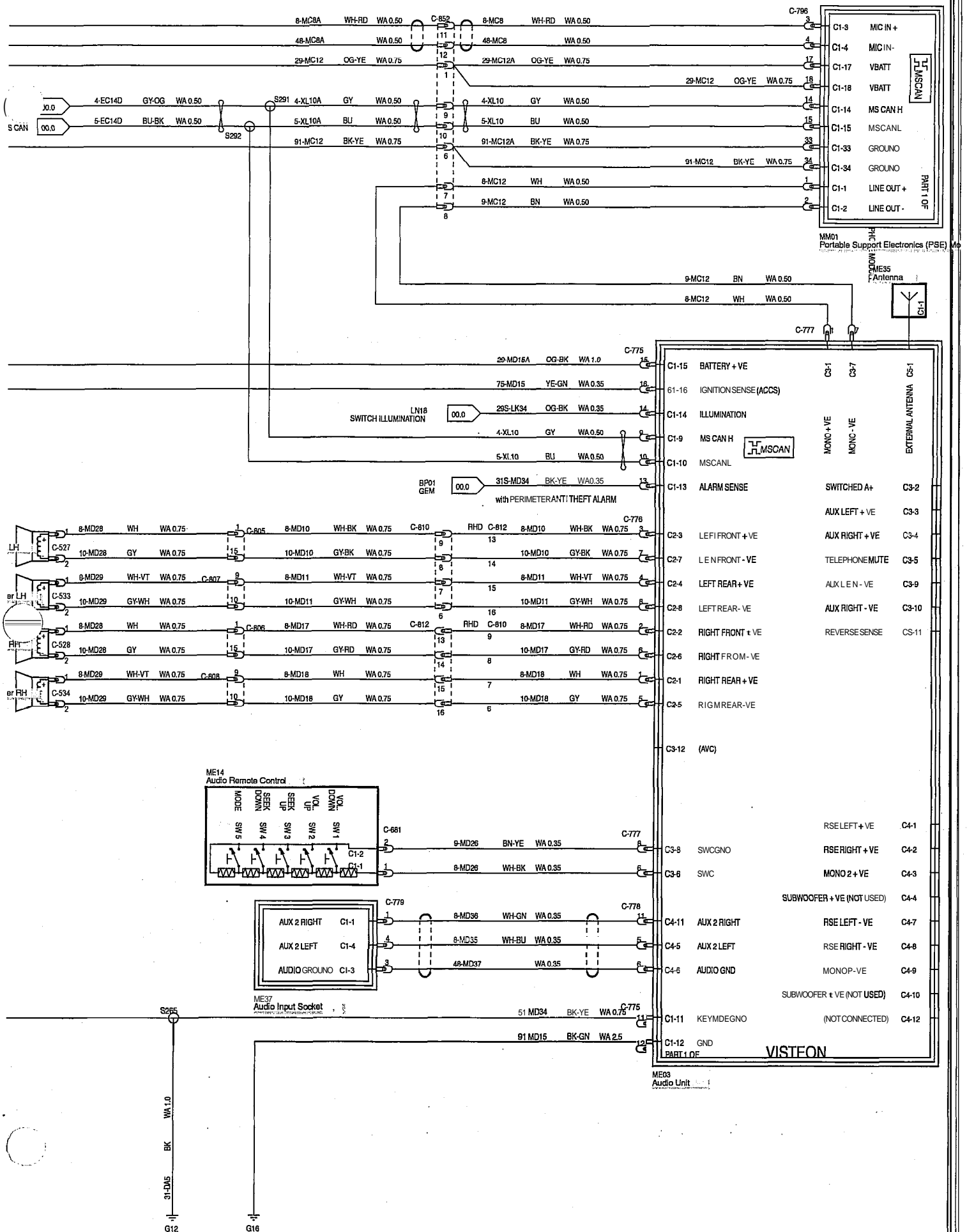
SCHEMATICS

Audio System.....	415-01A-2
Audio System — Vehicles With: Passenger Air Bag Deactivation Switch/Corded Cellular Phone/Cordless Cellular Phone.....	415-01A-4
Audio System — 2.0L Duratec-ST (M14).....	415-01A-6
Audio System — Vehicles With: Corded Cellular Phone/Cordless Cellular Phone, Vehicles Without: Passenger Air Bag Deactivation Switch.....	415-01A-8

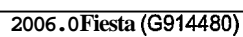












①

②

③

SECTION 415-01B Information and Entertainment System

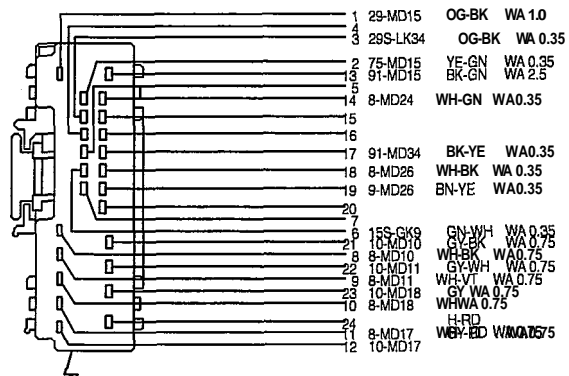
VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

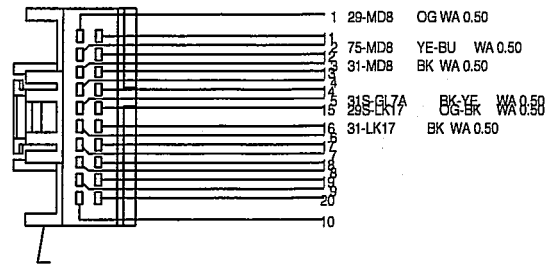
PAGE

CONNECTORS

Audio Unit.....	415-01B-2
Digital Versatile Disc (DVD) Player.....	415-01B-3
Front Door Speaker LH.....	415-01B-4
Front Door Speaker RH.....	415-01B-5
Rear Door Speaker LH.....	415-01B-6
Rear Door Speaker RH.....	415-01B-7
Audio Remote Control.....	415-01B-8
Audio Input Socket.....	415-01B-9
Portable Support Electronics (PSE) Module.....	415-01B-10
Microphone.....	415-01B-11
Audio Unit.....	415-01B-12
Audio Unit.....	415-01B-13
Audio Unit.....	415-01B-14
Audio Unit.....	415-01B-15

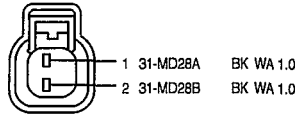


2L1T-14A464-CA
C-344
TO RADIO
HARNESS14K024



2L1T-14A464-DA
C-437
TO DVD PLAYER MODULE
HARNESS148549

PIN 2 => 10-MD28 GY 0.75 WA
PIN 1 => 8-MD28 WH 0.75 WA



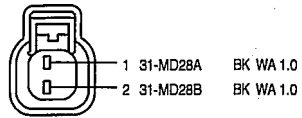
XR3T-14A464-AA

C-527

TO FROM DOOR SPEAKER (LHS)

HARNESS14A584

PIN 2 => 10-MD28 GY 0.75 VA
PIN 1 => 8-MD28 WH 0.75 VA



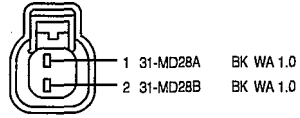
XR3T-14A464-AA

C-528

TO FRONT DOOR SPEAKER (RHS)

HARNESS14A584

PIN 2 ⇒ 10-MD29 GY-WH 0.75 WA
PIN 1 ⇒ 8-MD29 WH-M0.75 WA



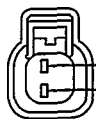
XR3T-14A464-AA

C-533

TO REAR DOOR SPEAKER (LHS)

HARNESS 14A584

PIN 2 => 10-MD29 GY-WH 0.75 WA
 PIN 1 => 8-MD29 WH-VT 0.75 WA



1 31-MD28A BK WA 1.0
 2 31-MD28B BK WA 1.0

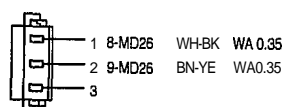
XR3T-14A464-AA

C-534

TO REAR DOOR SPEAKER (RHS)

HARNESS 14A584



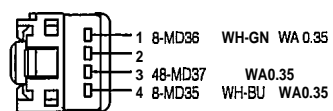


94BG-14489-LCB

C-681

TO RADIO REMOTE CONTROL SWITCH

HARNESS 14K024

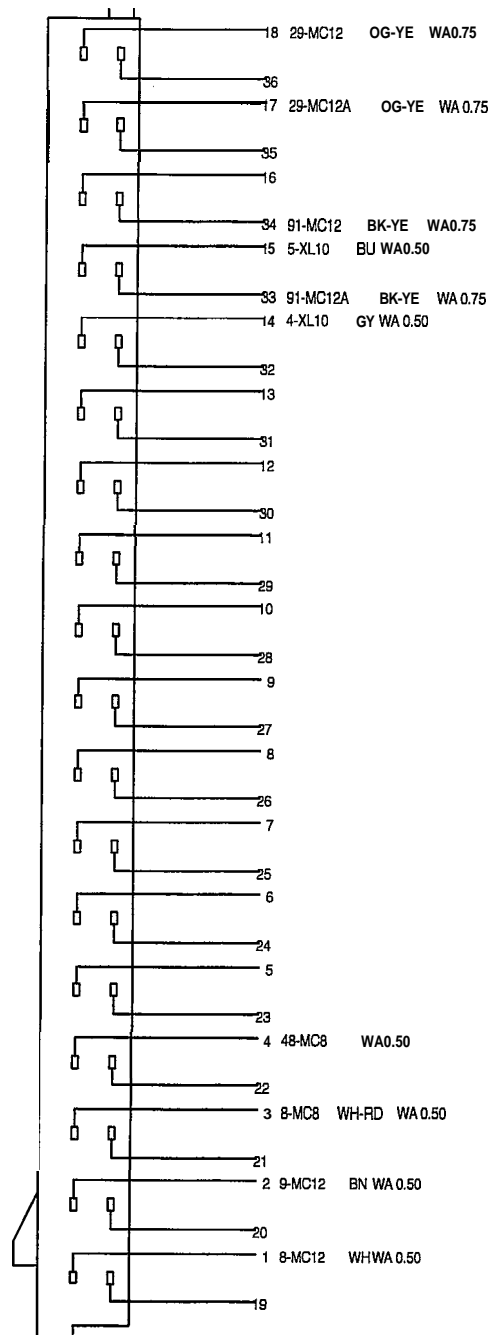


1L2T-14489-GB

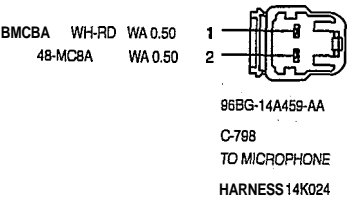
C-779

TO AUDIO JACK

HARNESS14K024



1X4T-14489-HA
G796
TO HANDSFREE PHONE MODULE
HARNESS 14C007



PIN15 => 29-MD15A OGBK 1.0 WA

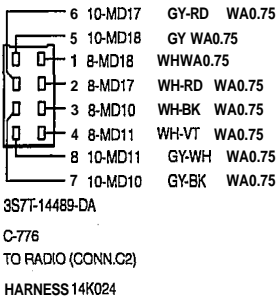
31S-MD34	BK-YE	WA0.35	13		9	4-XL10	GY	WA 0.50
29S-LK34	OG-BK	WA0.35	14		10	5-XL10	BU	WA0.50
29-MD15	OGBK	WA1.0	15		11	91-MD34	BK-YE	WA 0.75
75-MD15	YE-GN	WA0.35	16		12	91-MD15	BK-GN	WA2.5

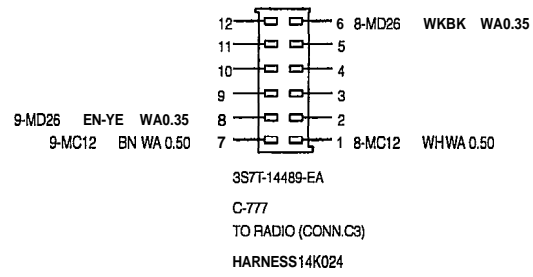
3S7T-14A541-AB

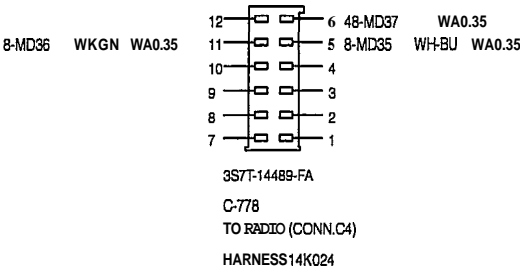
C-775

TO RADIO (CONN.C1)

HARNESS 14K024









SECTION 417-01 Exterior Lighting

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

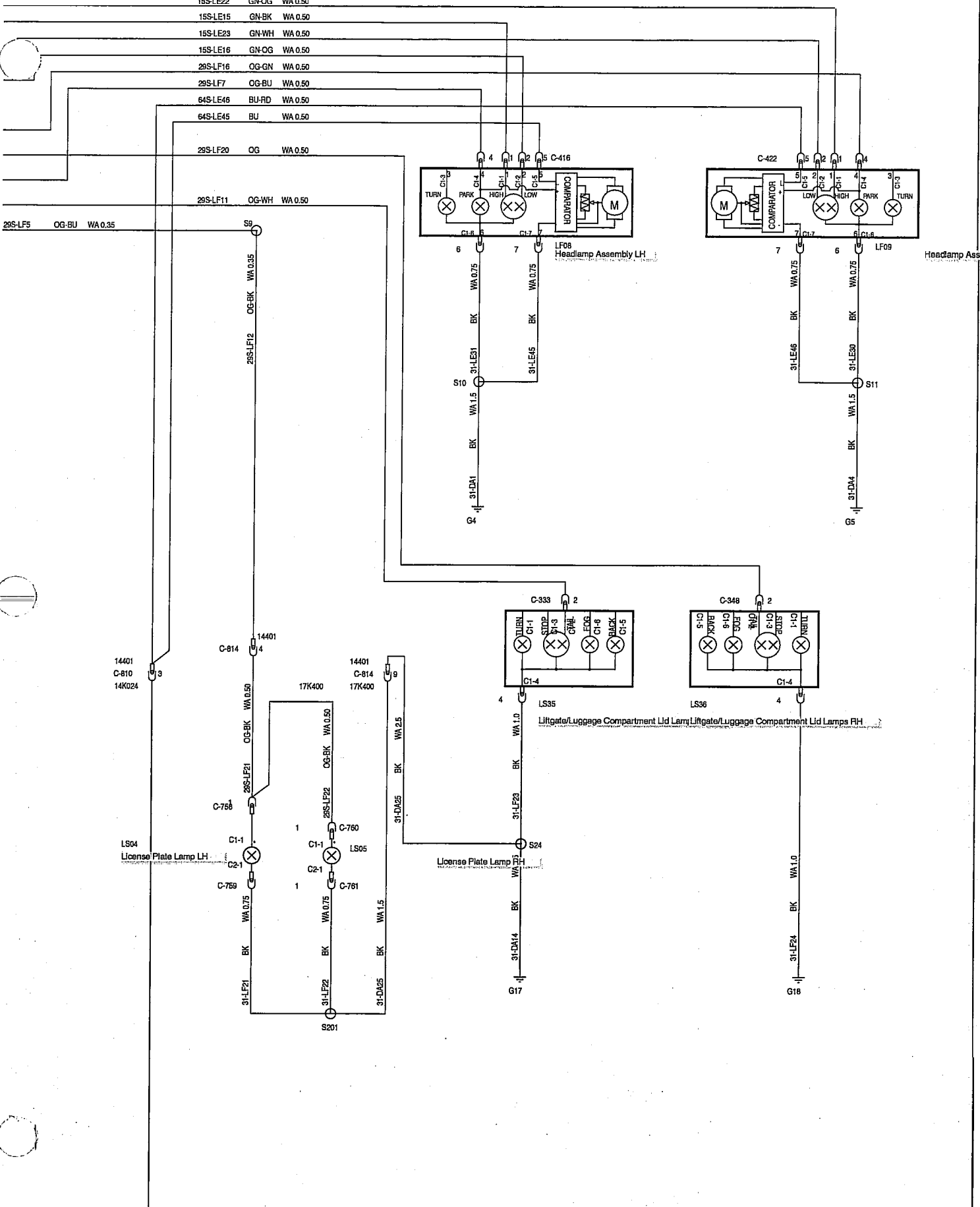
PAGE

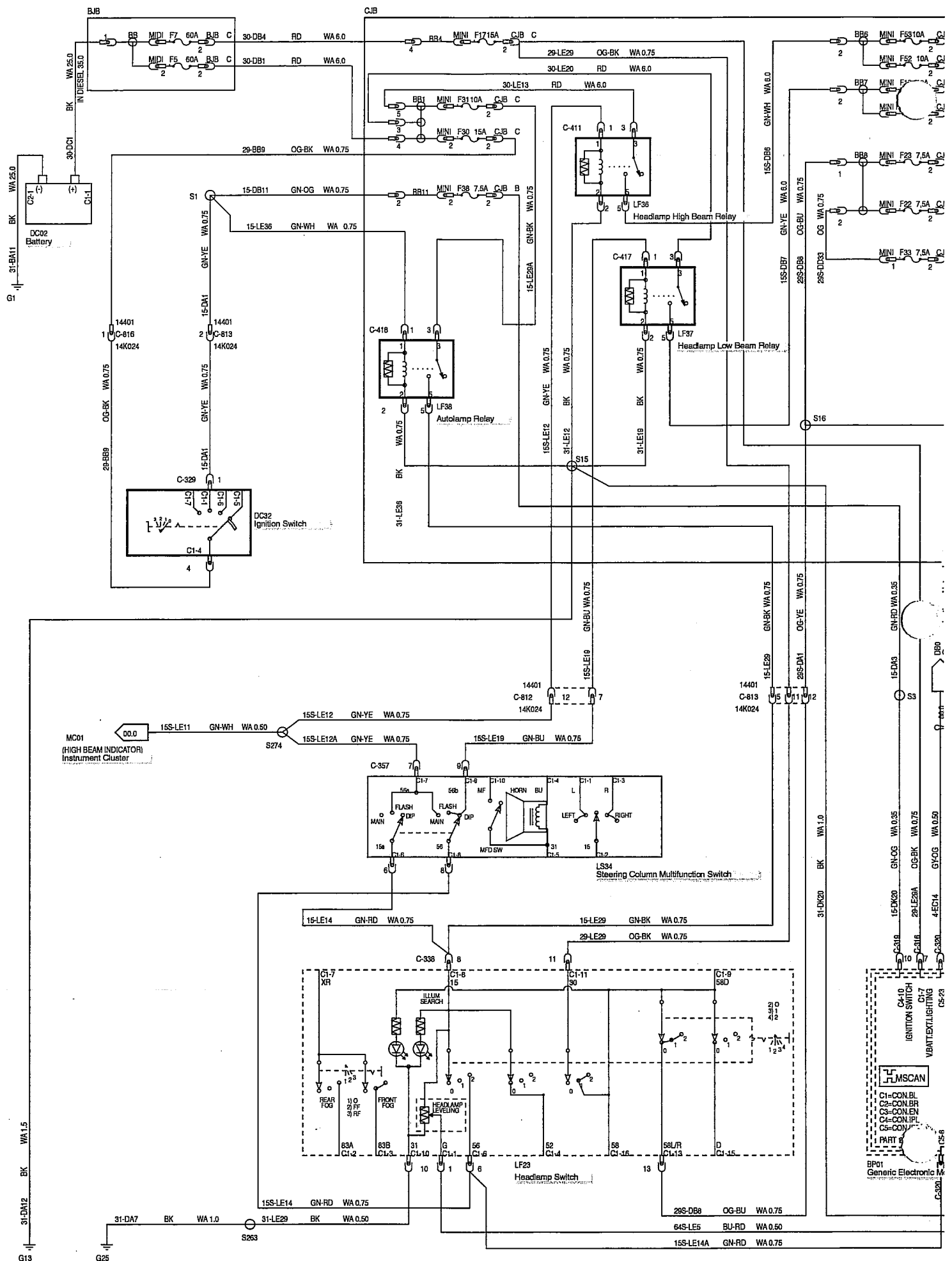
SCHEMATICS

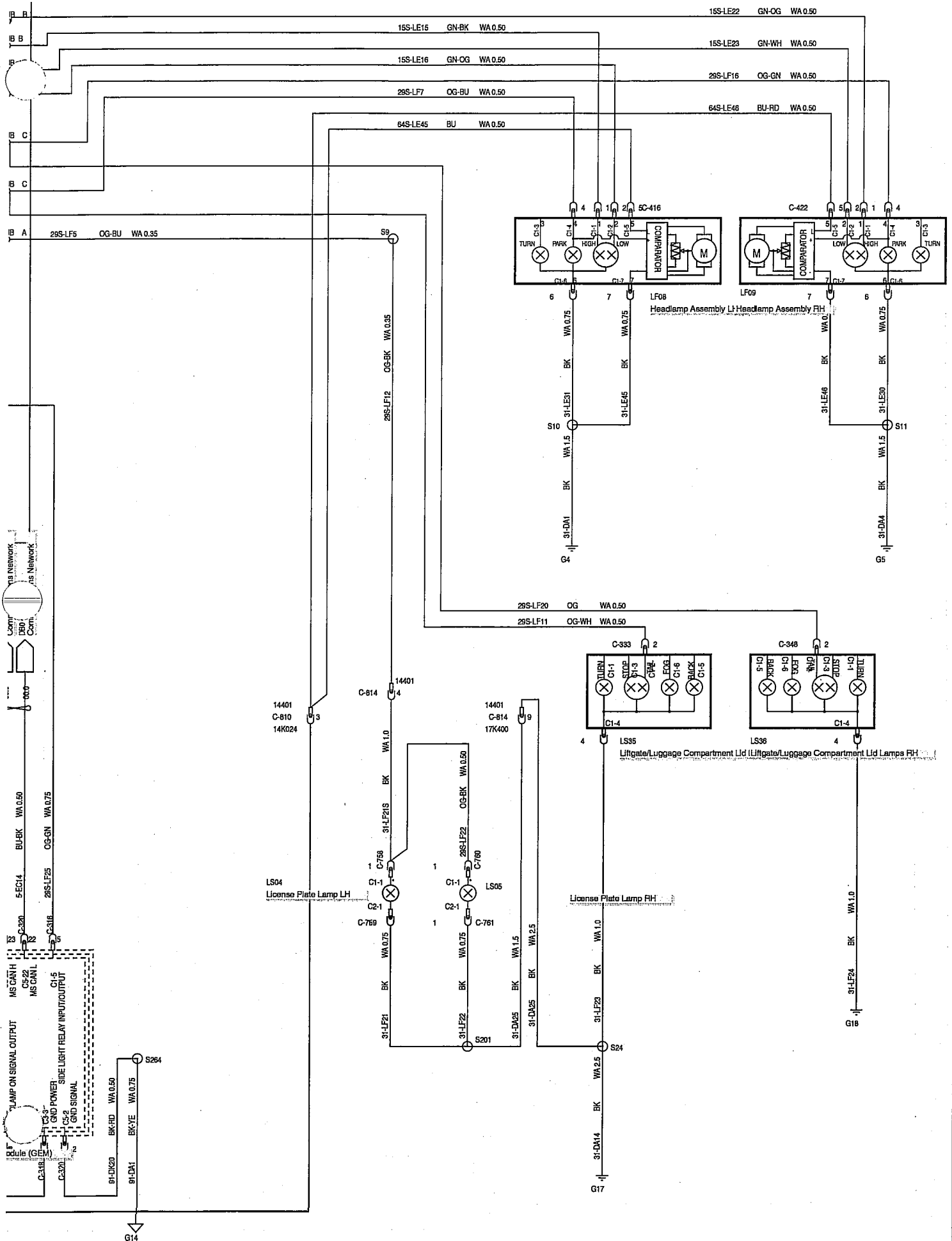
Headlamps.....	417-01-2
Headlamps — Vehicles With: Headlamp Leveling.....	417-01-4
Headlamps — 2.0L Duratec-HE (MI4), Vehicles With: Headlamp Leveling.....	417-01-6
Headlamps — Vehicles With: Autolamps.....	417-01-8
Fog Lamps.....	417-01-10
Stoplamps.....	417-01-12
Stoplamps — 2.0L Duratec-ST (MI4).....	417-01-14
Turn Signal and Hazard Lamps.....	417-01-16
Reversing Lamps — Vehicles With: 4-Speed Automatic Transmission (AW81-40).....	417-01-18
Reversing Lamps — 1.4L Duratorq-TDCi (DV) Diesel/1.6L Duratorq-TDCi (DV) Diesel, Vehicles With: 5-Speed Manual Transmission (iB5).....	417-01-20
Reversing Lamps — 2.0L Duratec-ST (MI4).....	417-01-22
Reversing Lamps — Vehicles With: 5-Speed Manual Transmission (iB5).....	417-01-24

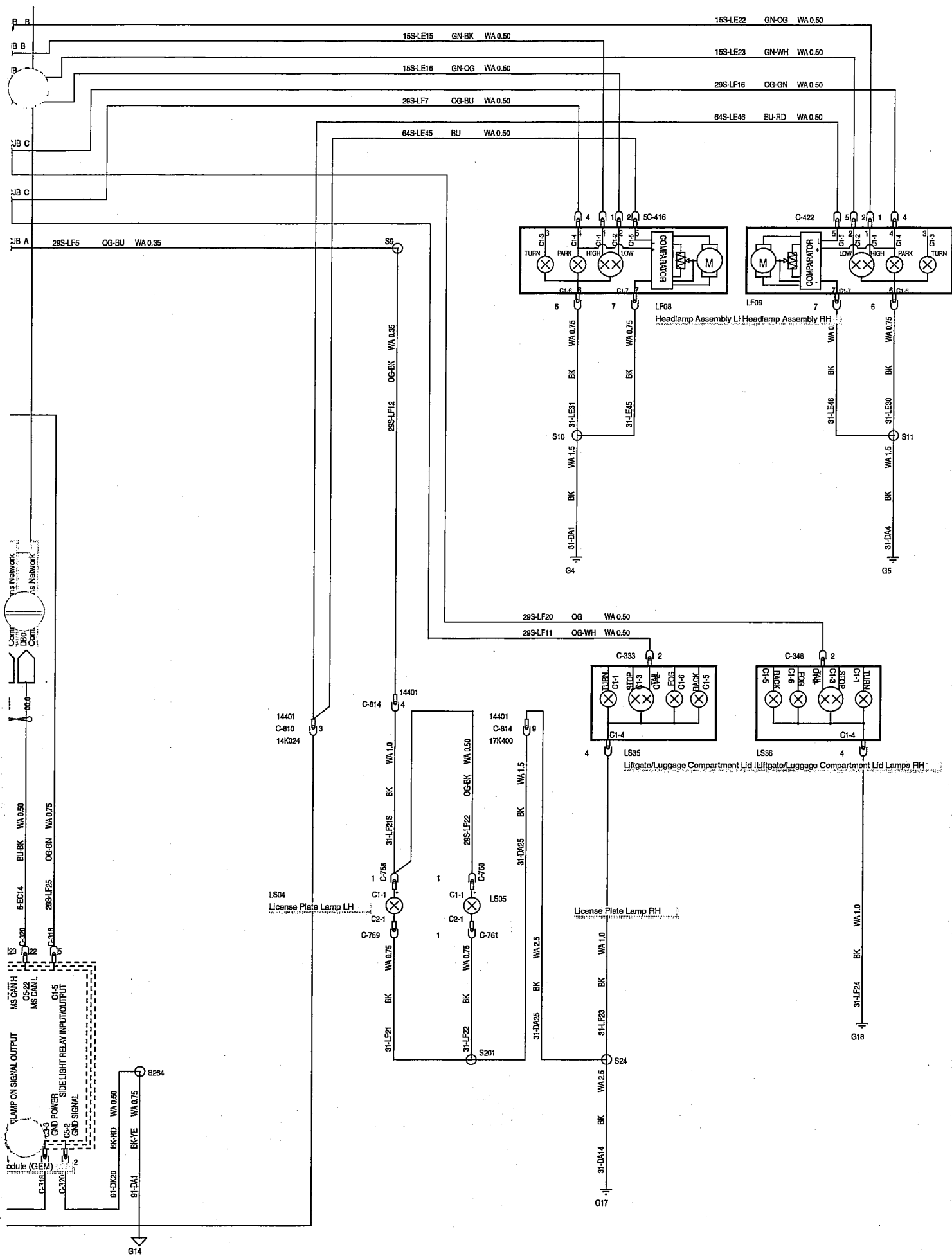
CONNECTORS

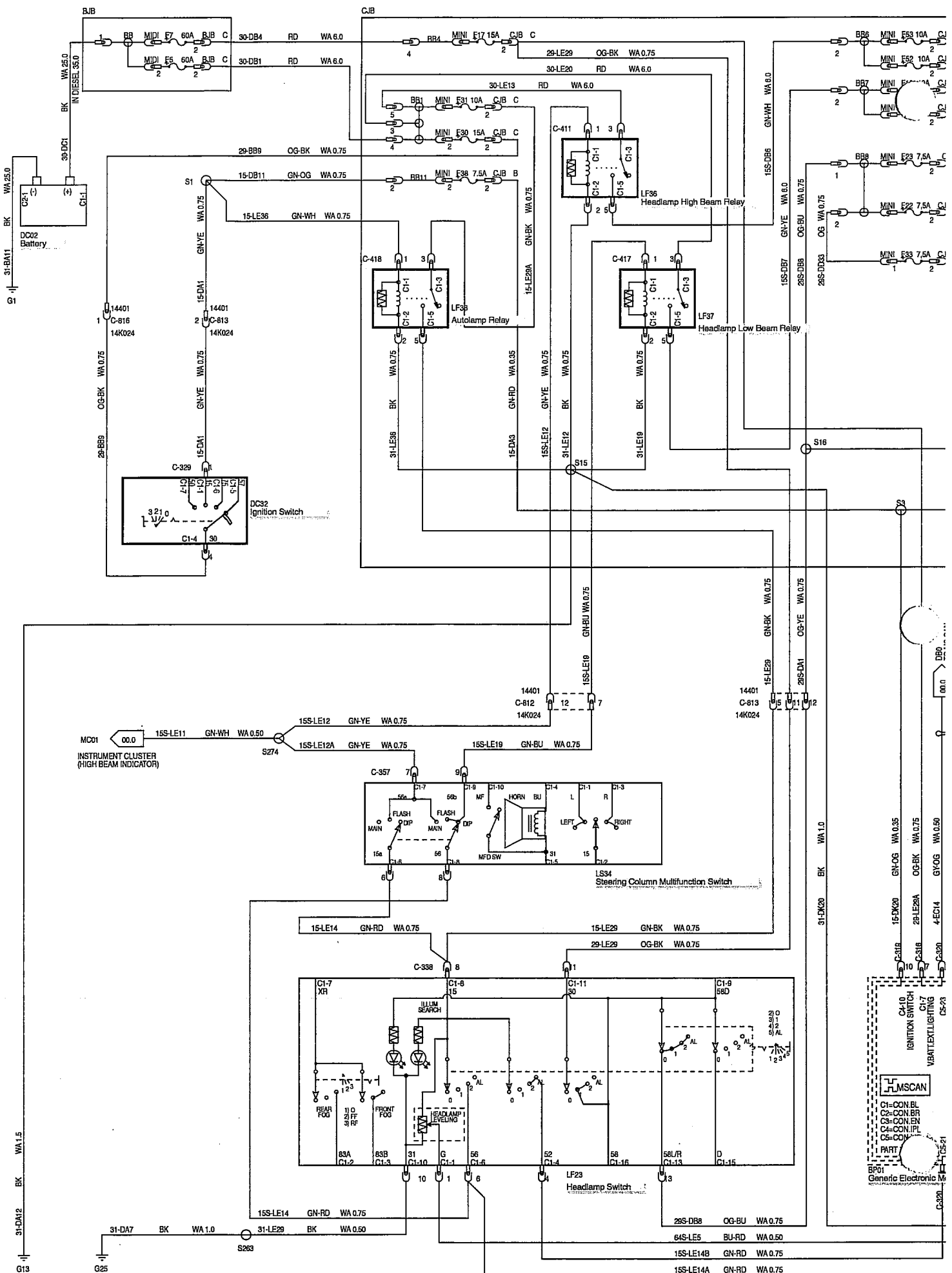
Autolamp and Rain Sensor.....	417-01-26
Autolamp Relay.....	417-01-27
Reversing Lamp Relay.....	417-01-28
Headlamp High Beam Relay.....	417-01-29
Headlamp Low Beam Relay.....	417-01-30
Side Turn Signal Lamp RH.....	417-01-31
Headlamp Assembly LH.....	417-01-32
Side Turn Signal Lamp LH.....	417-01-33
Headlamp Assembly RH.....	417-01-34
Rear Lamp Assembly LH.....	417-01-35
High Mounted Stoplamp.....	417-01-36
Front Fog Lamp RH.....	417-01-37
Front Fog Lamp LH.....	417-01-38
License Plate Lamp LH.....	417-01-39
License Plate Lamp RH.....	417-01-40
Headlamp Switch.....	417-01-41
Stoplamp Switch.....	417-01-42
Rear Lamp Assembly RH.....	417-01-43
High Mounted Stoplamp.....	417-01-44
License Plate Lamp LH.....	417-01-45
License Plate Lamp RH.....	417-01-46

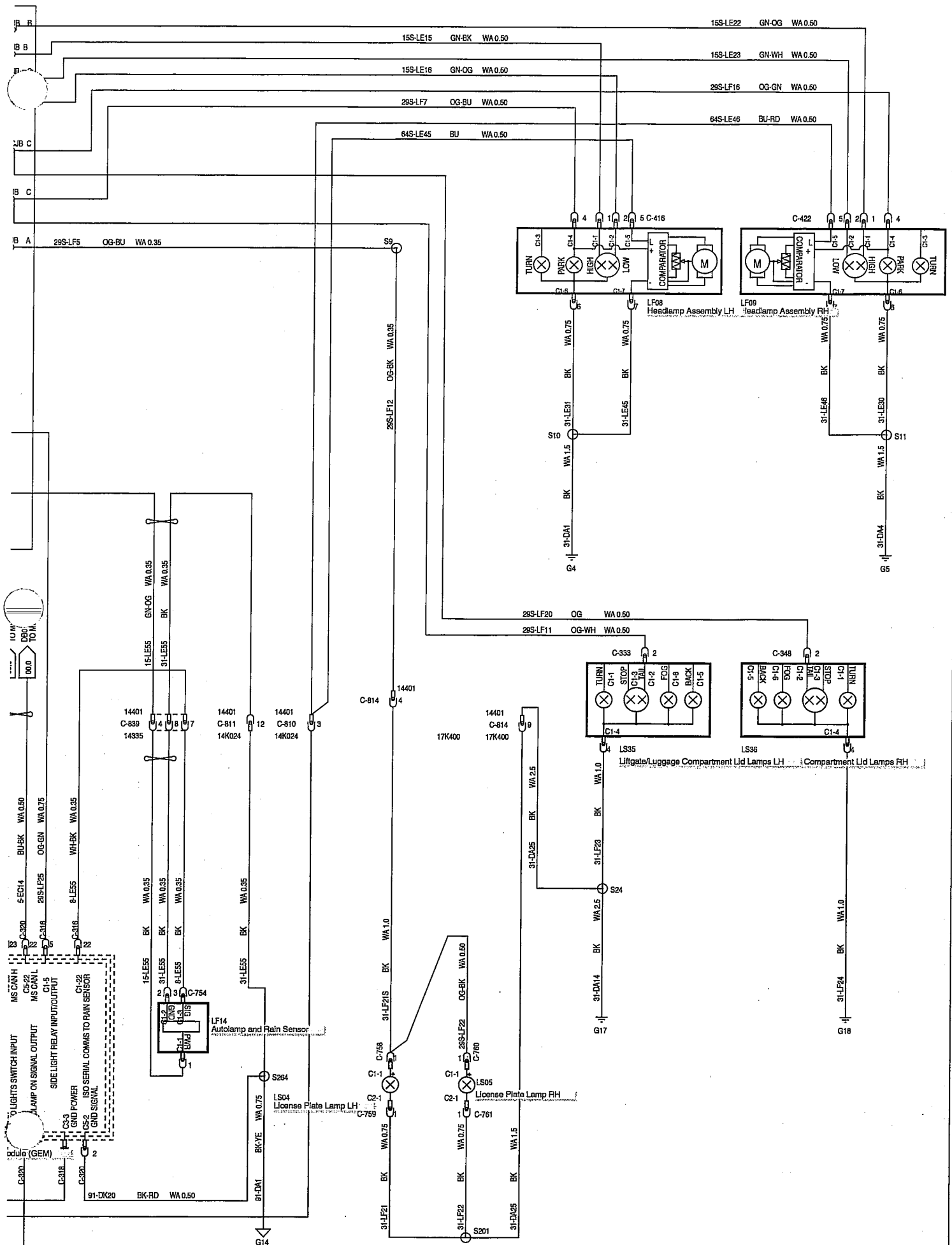


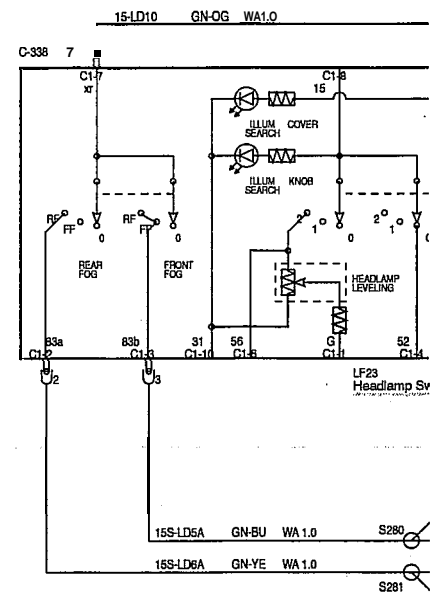
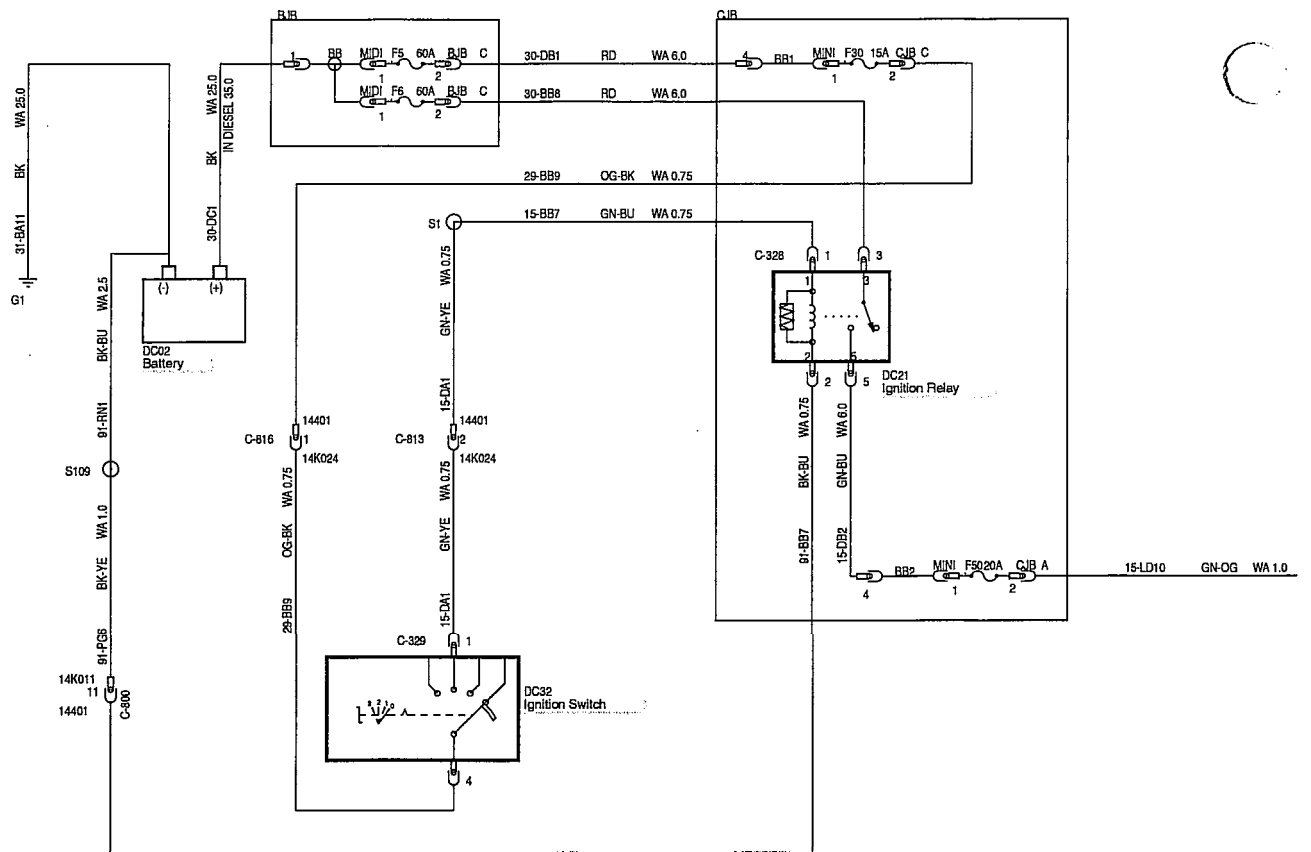


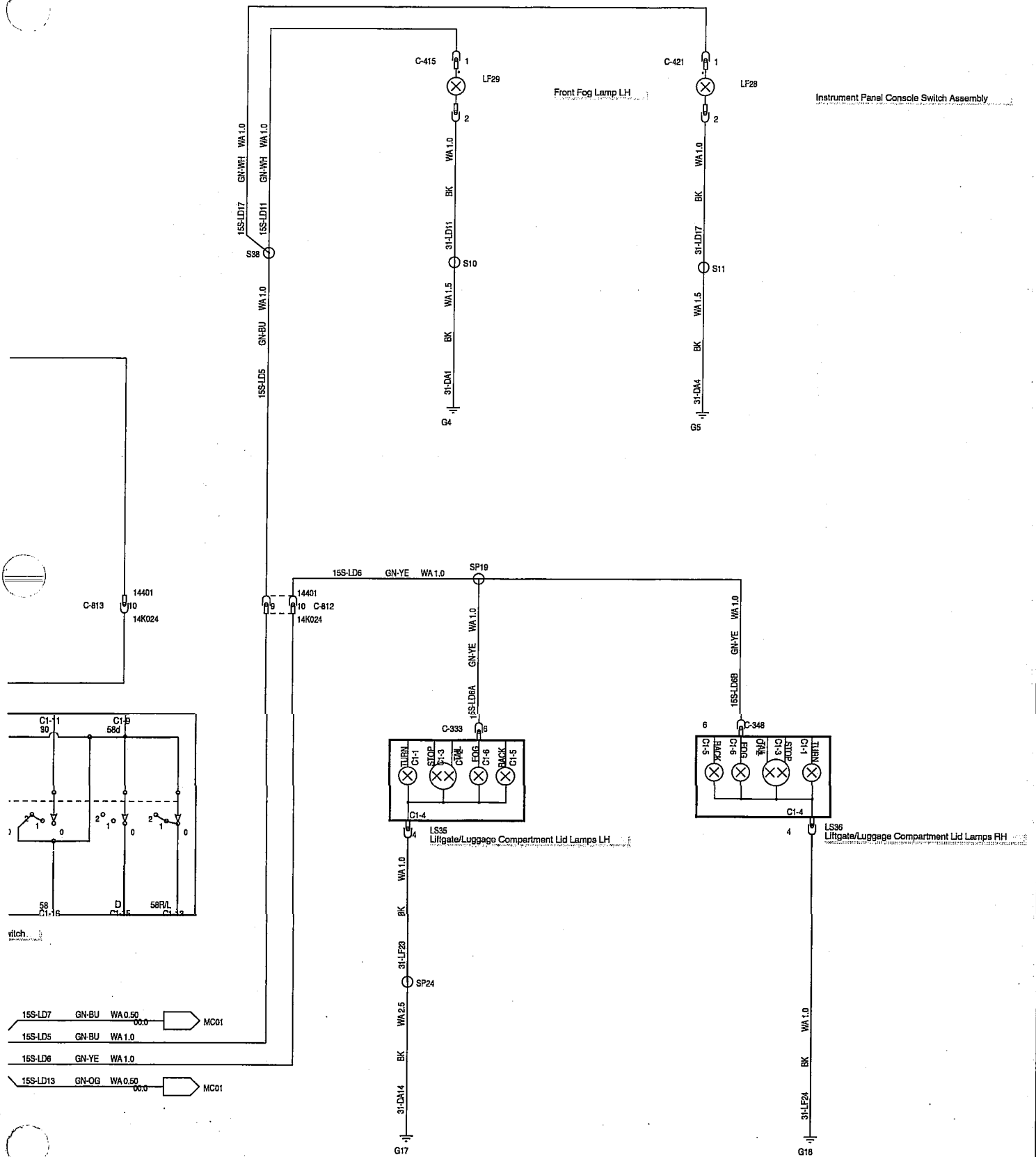


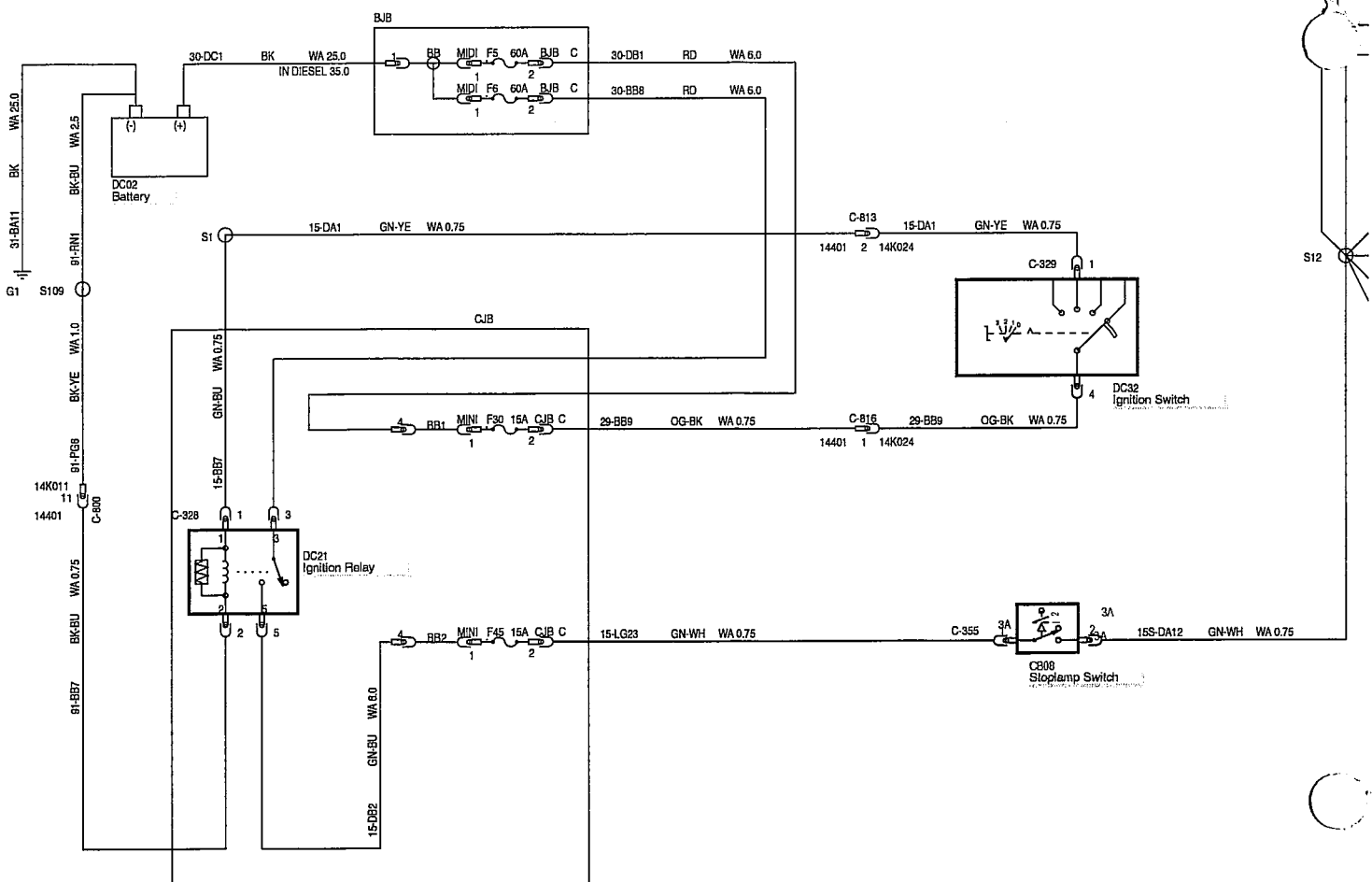


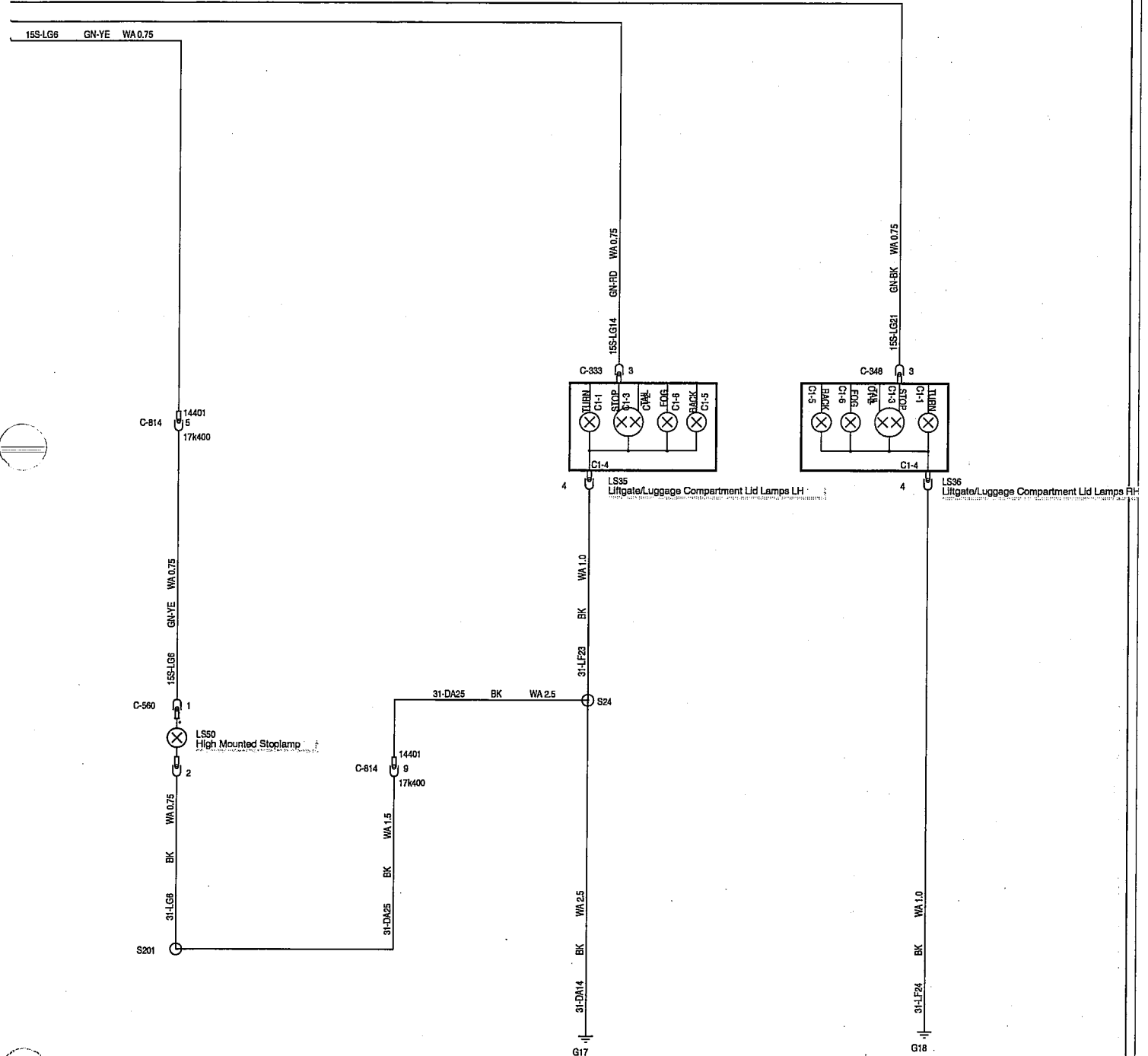
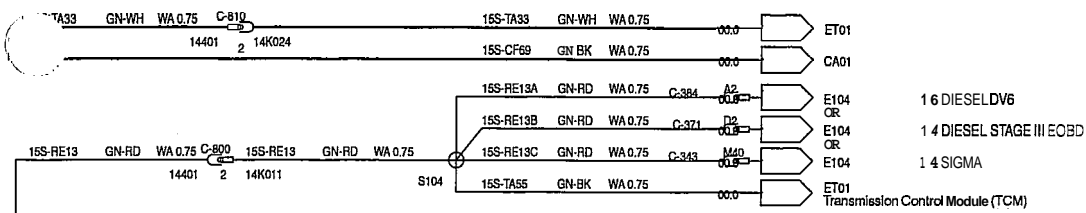


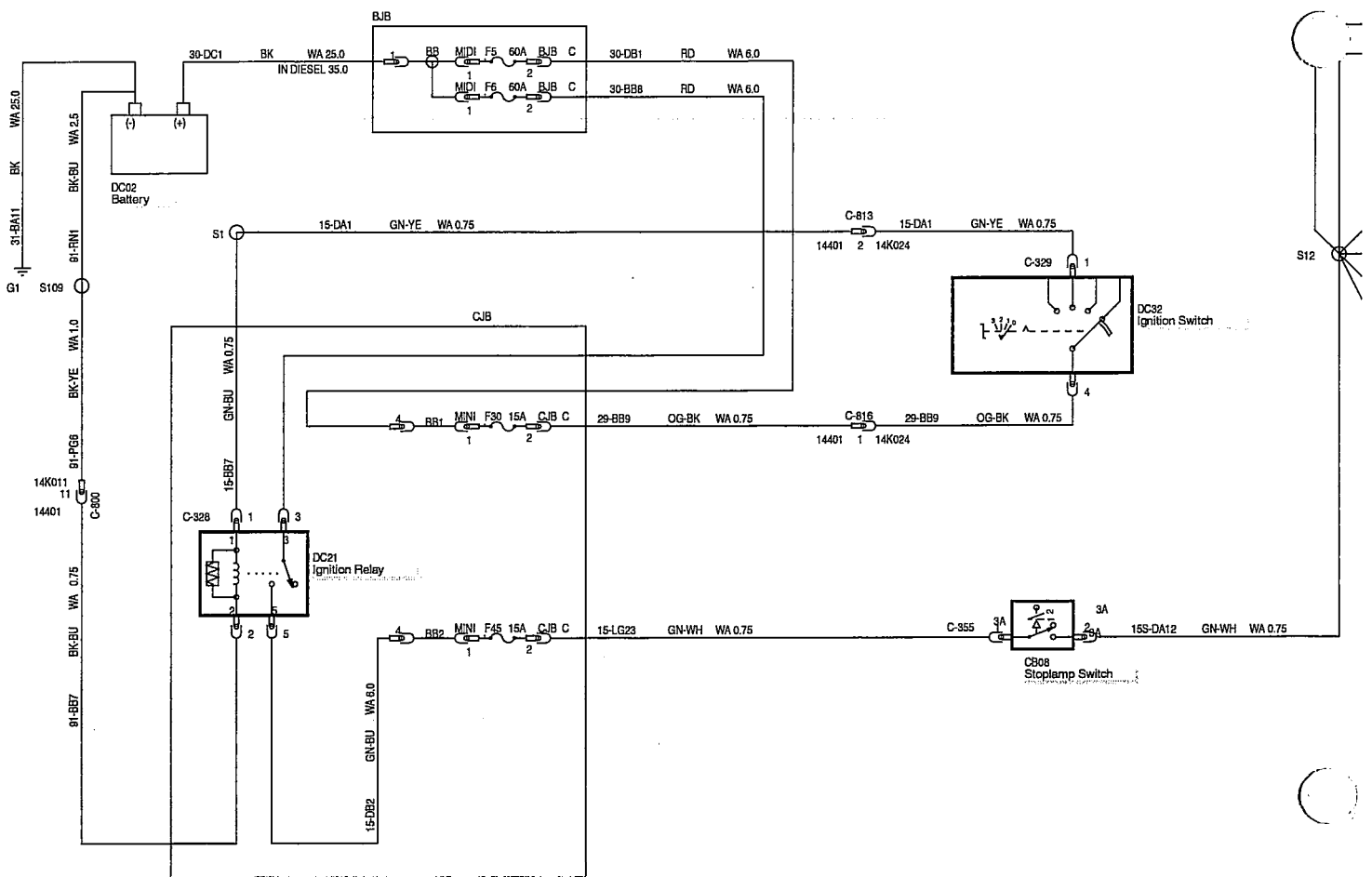


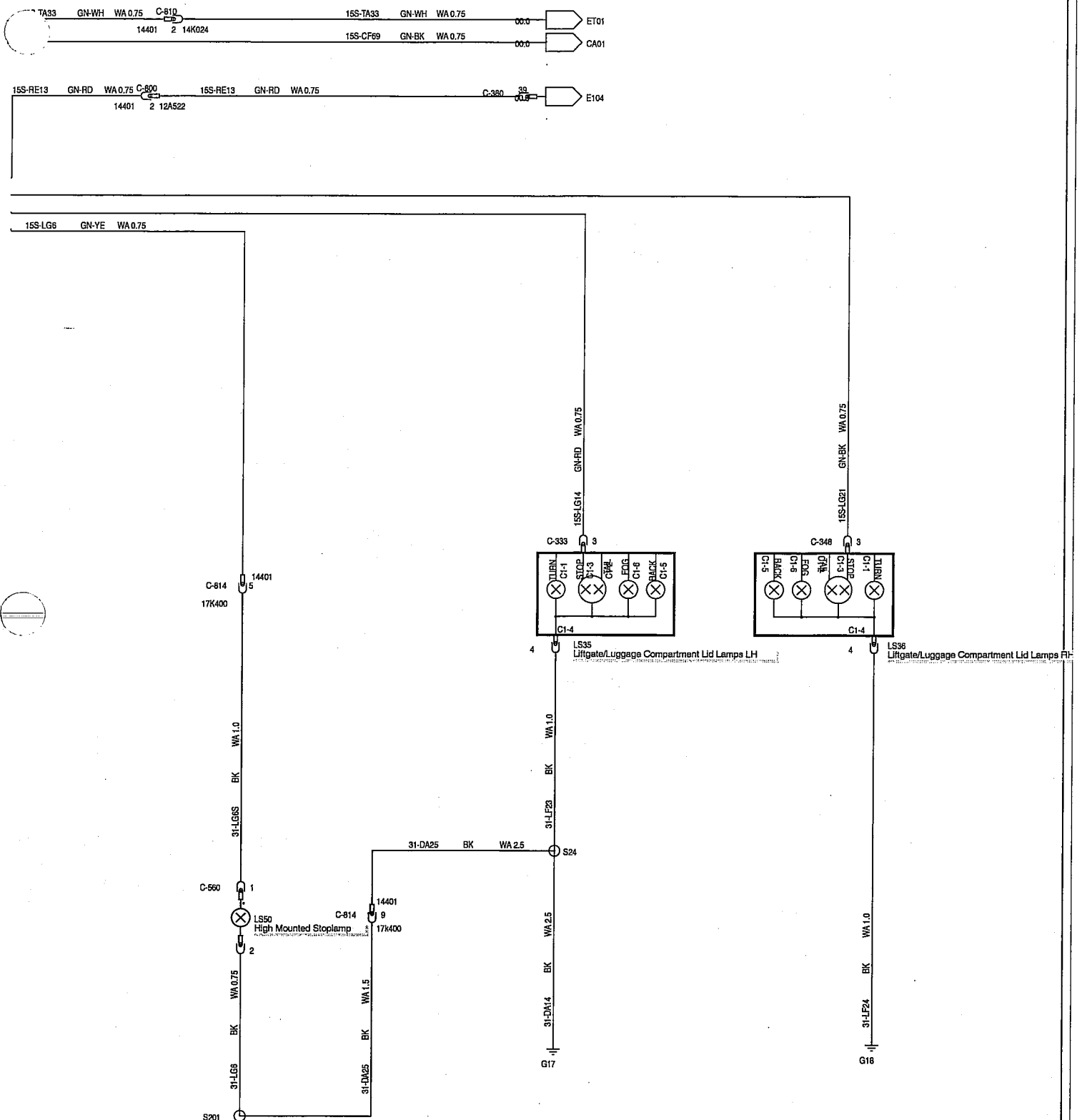


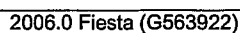


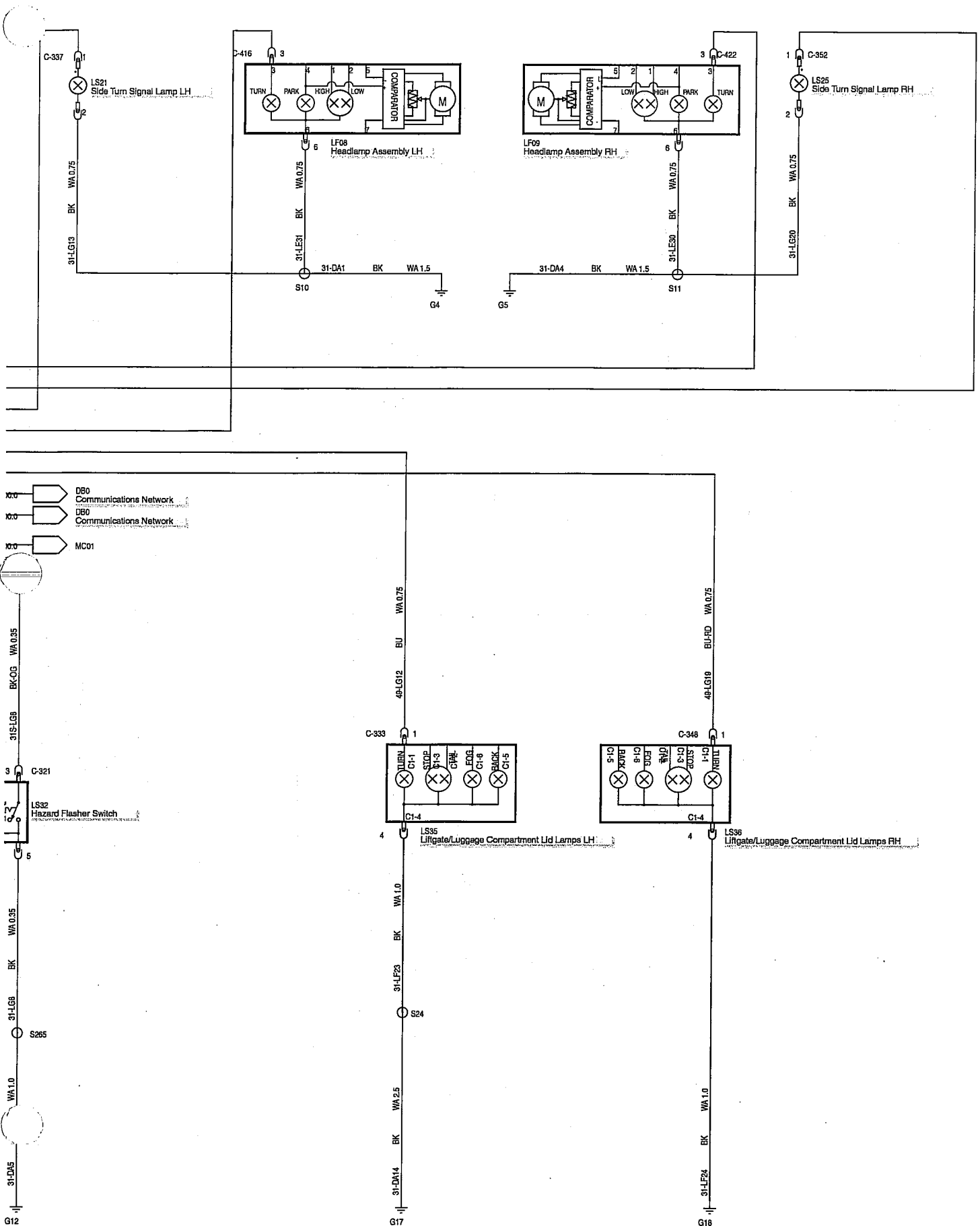




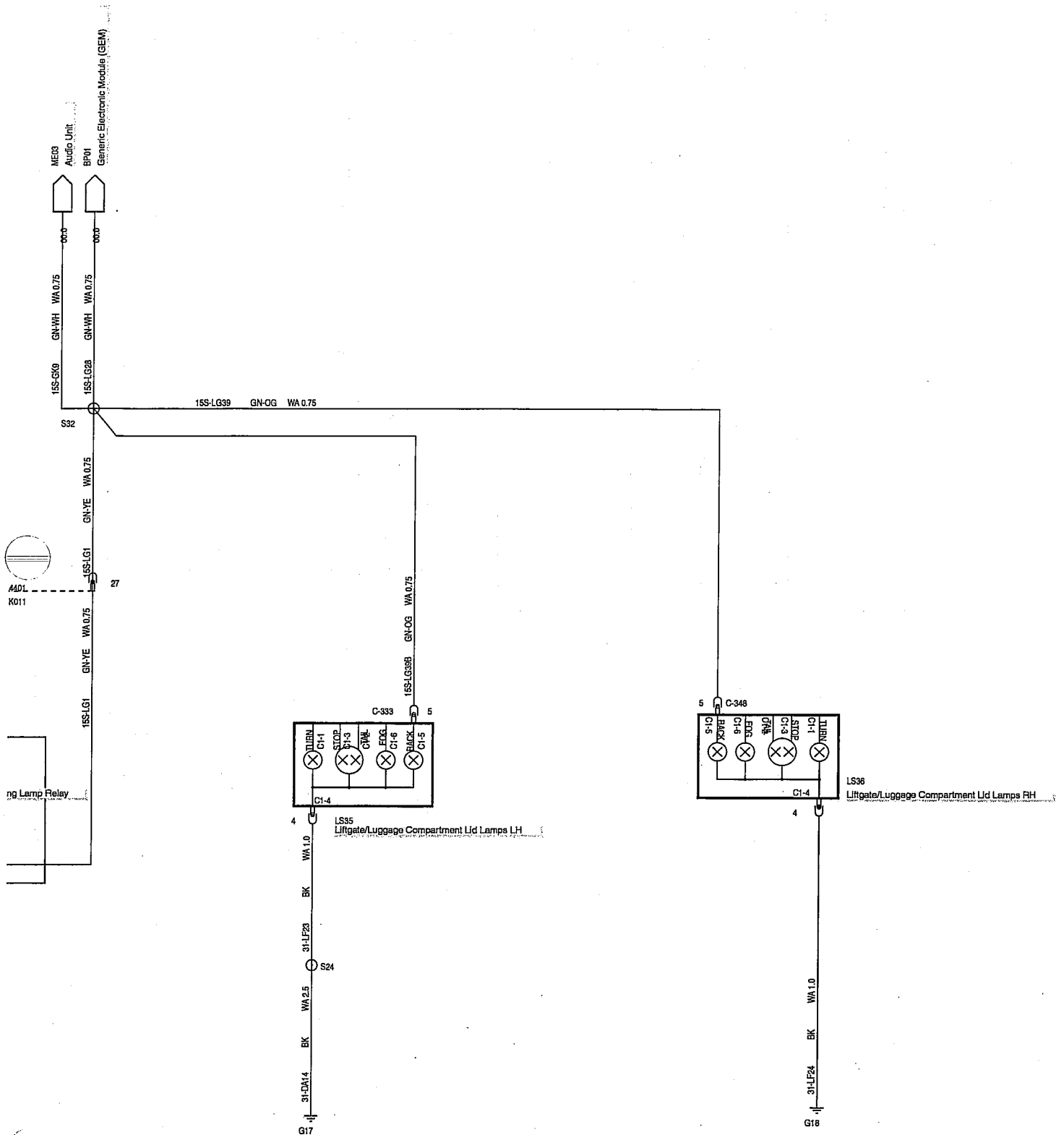


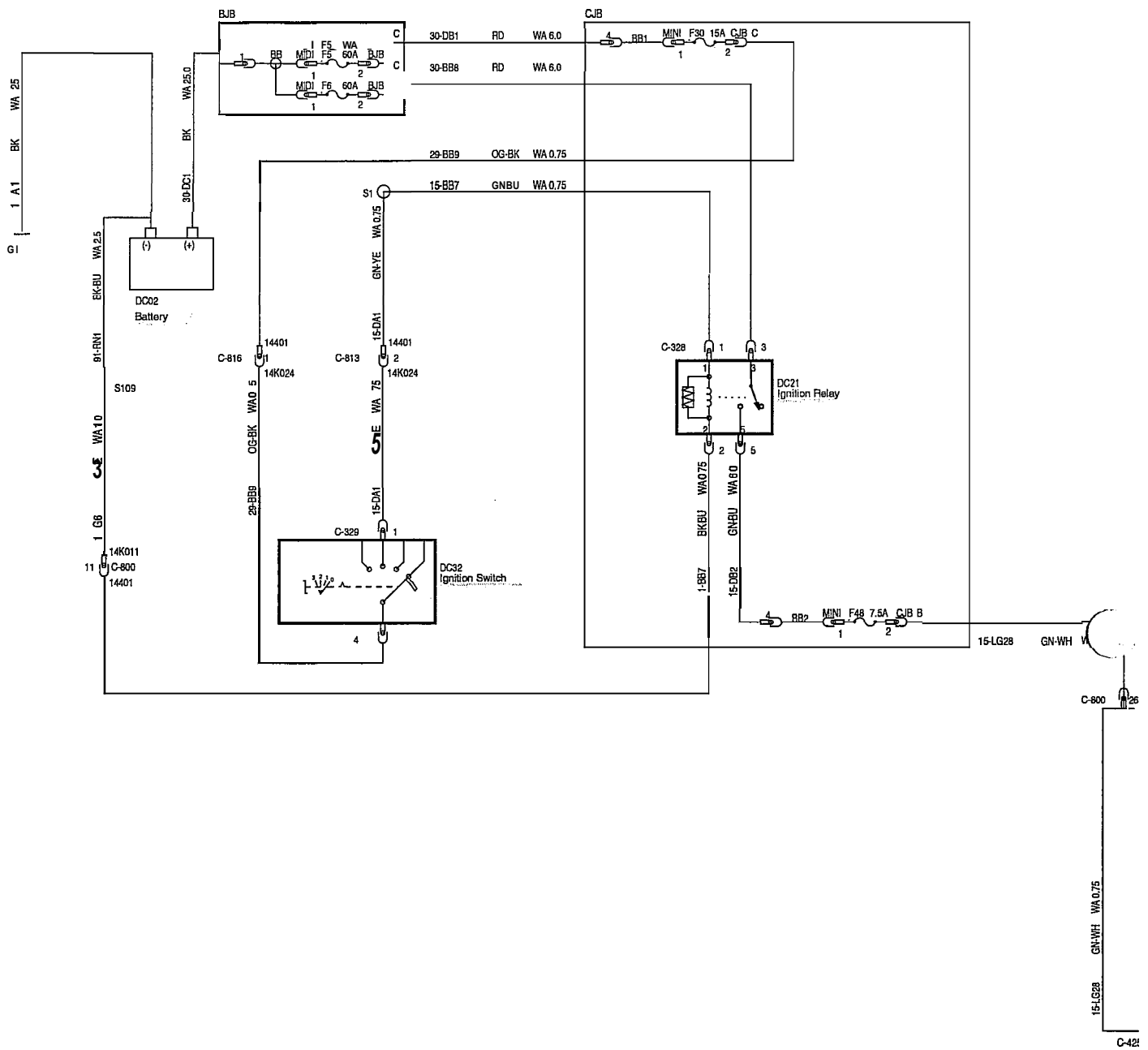


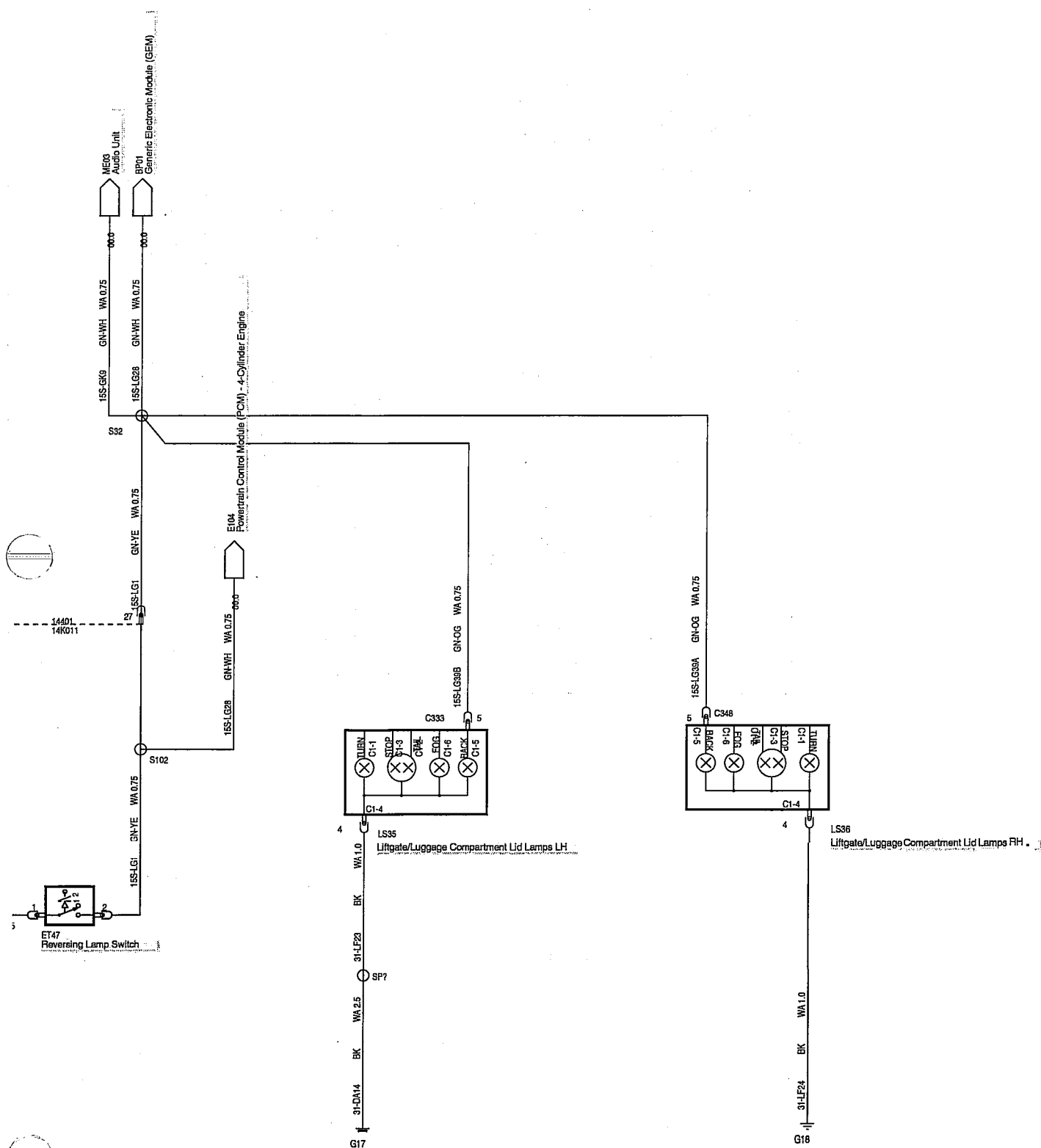




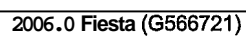


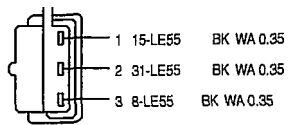












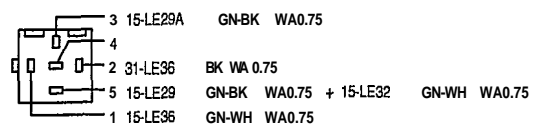
1X4T-14489-RA

C-754

TO AUTOLAMP RAIN SENSOR

HARNESS 14335

PIN 5 \Rightarrow 15-LE32 GN-WH 0.75 WA + 15-LE29 GN-BK 0.75 WA



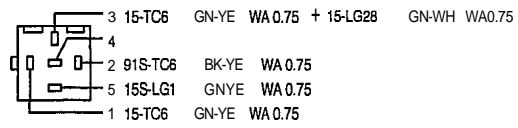
2S6T-14A481-BA

C-418

TO AUTOLAMP RELAY

HARNESS 14401

PIN3 => 15-LG28 GN-WH 0.75 WA+ 15-TC6 GN-YE 0.75 WA

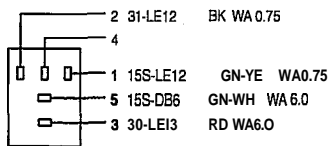


2S6T-14A481-BA

C-434

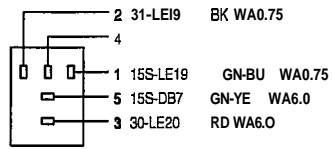
TO BACKUPLAMP RELAY

HARNESS 14K011



2S6T-14A481-AA
G411
TO HIGH BEAM RELAY
HARNESS 14401



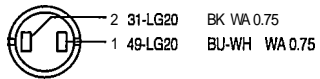


256T-14A481-AA

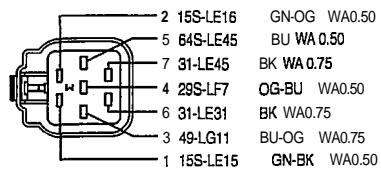
C-417

TO LOW BEAM RELAY

HARNESS 14401



4M5T-13K370-AA_DUMMY
C-352
TO RIGHT SIDE TURN SIGNAL LAMP
HARNESS14401

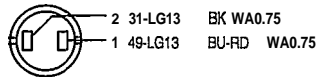


97AG-14A464-GGA

C-416

TO LEFT HEADLAMP

HARNESS 14401

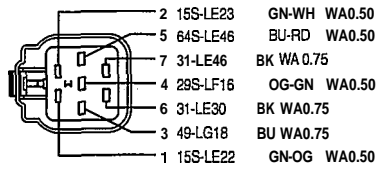


4M5T-13K370-AA_DUMMY
C-337

TO LEFT SIDE TURN SIGNAL LAMP

HARNESS 14401



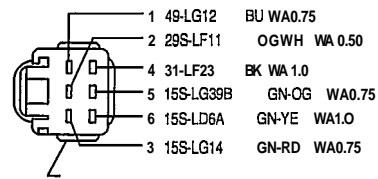


97AG-14A464-GGA

6422

TO RIGHT HEADLAMP

HARNESS14401

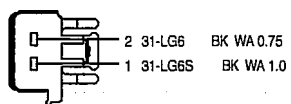


5F9T-14489-CA

C-333

TO LEFT COMBINED REAR LAMP

HARNES 14401

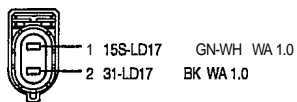


4S7T-14489-VNA

C-550

TO CENTER HIGH STOP LAMP

HARNESS 17K400



5S6T-14A464-FB
C-421
TO RIGHT FRONT FOG LAMP
HARNESS 14401



- 1 15S-LD11 GN-WH WA 1.0
- 2 31-LD11 BK WA 1.0

5S8T-14A464-FB

C-415

TO LEFT FROM FOG LAMP

HARNESS 14401

PIN 1 => 31-LF21S BK 1.0 WA + 29S-LF22 OG-BK 0.50 WA
 PIN 1 => 29S-LF21 OG-BK 0.50 WA + 29S-LF22 OG-BK 0.50 WA

□ 1 29S-LF22 OG-BK WA0.50 + 29S-LF21 OGBK WA 0.50

93BG-14474-ZAA

C-758

M LEFT LICENSE PLATE LAMP

HARNESS 17K400



1 29S-LF22 OG-BK WA0.50

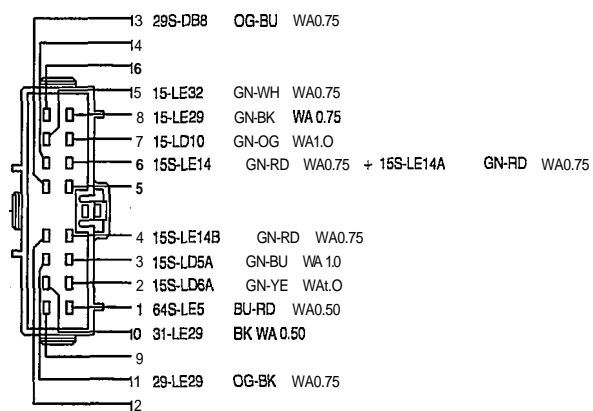
93BG-14474-ZAA

C-760

TO RIGHT UCENSEPLATE LAMP

HARNESS 17K400

PIN 4 => 15S-LE6 GN-YE 0.75 WA
 PIN 8 => 15-LE14 GN-RD 0.75 WA + 15-LE29 GN-BK 0.75 WA
 PIN 6 => 15S-LE14A GN-RD 0.75 WA + 15S-LE14 GN-RD 0.75 WA

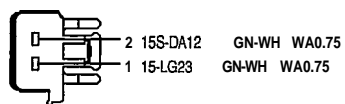


98AG-14489-TTB

C-338

TO LIGHT SWITCH

HARNESS 14K024

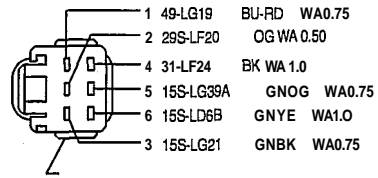


4S7T-14489-VNA

C-355

TO STOP LAMP SWITCH

HARNESS 14401



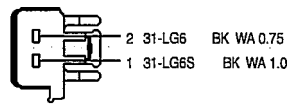
5F9T-14489-CA

C-348

TO RIGHT COMBINED REAR LAMP

HARNESS14401

PIN 1 => 15S-LG6 CNYE 0.75VA



4S7T-14489-VNA

C-550

TO CENTER HIGH STOP LAMP

HARNESS 17K400

1 31-LF21 BK WA 0.75

93BG-14474-ZAA

C-759

TO LEFT LICENSE PLATE LAMP

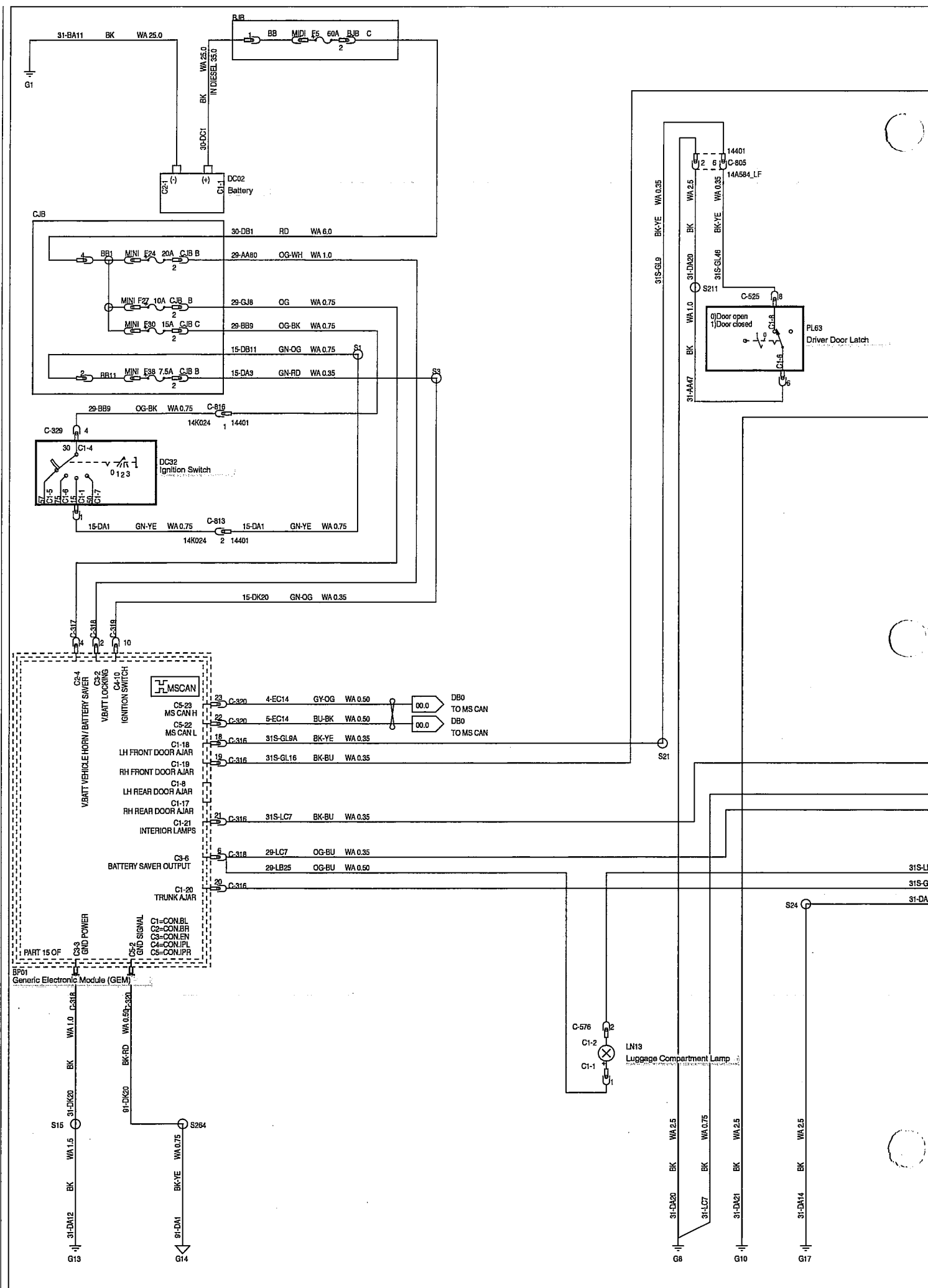
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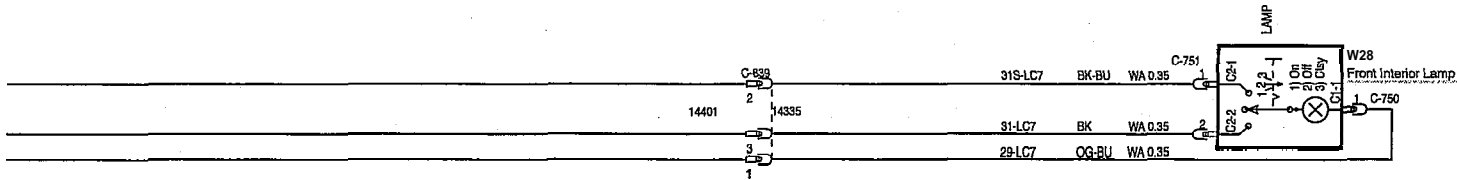
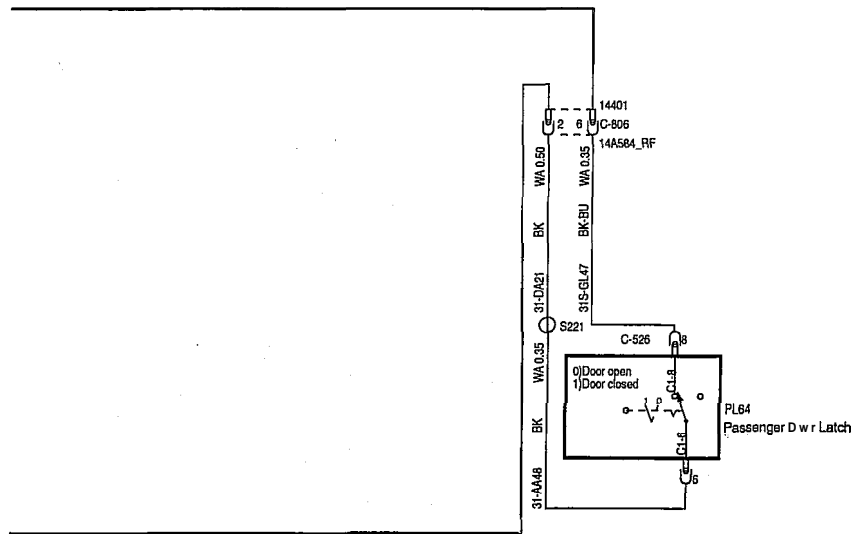
1 31-LF22 BK WA0.75
93BG-14474-ZAA
C-761
TO RIGHT UCENSE PLATE LAMP
HARNESS 17K400

SECTION 417-02 Interior Lighting

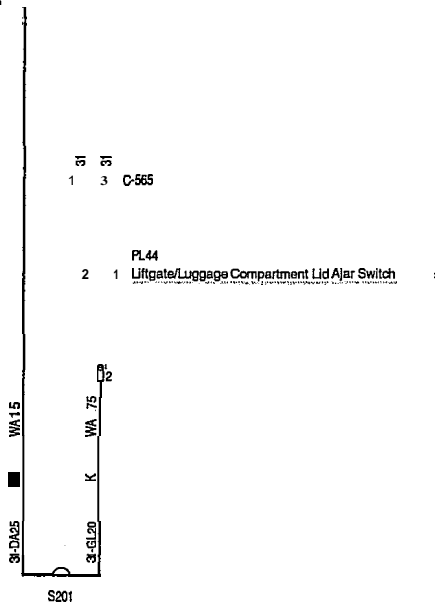
VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS	PAGE
SCHEMATICS	
Courtesy and Demand Lighting — 3-Door.....	417-02-2
Courtesy and Demand Lighting — 5-Door.....	417-02-4
Courtesy and Demand Lighting — 2.0L Duratec-ST (MI4) RHD.....	417-02-6
CONNECTORS	
Front Interior Lamp.....	417-02-8
Rear Interior Lamp.....	417-02-9
Luggage Compartment Lamp.....	417-02-10
Rear Map Reading Lamp LH.....	417-02-11
Rear Map Reading Lamp RH.....	417-02-12
Front Interior Lamp.....	417-02-13
Rear Interior Lamp.....	417-02-14
Front Interior Lamp.....	417-02-15

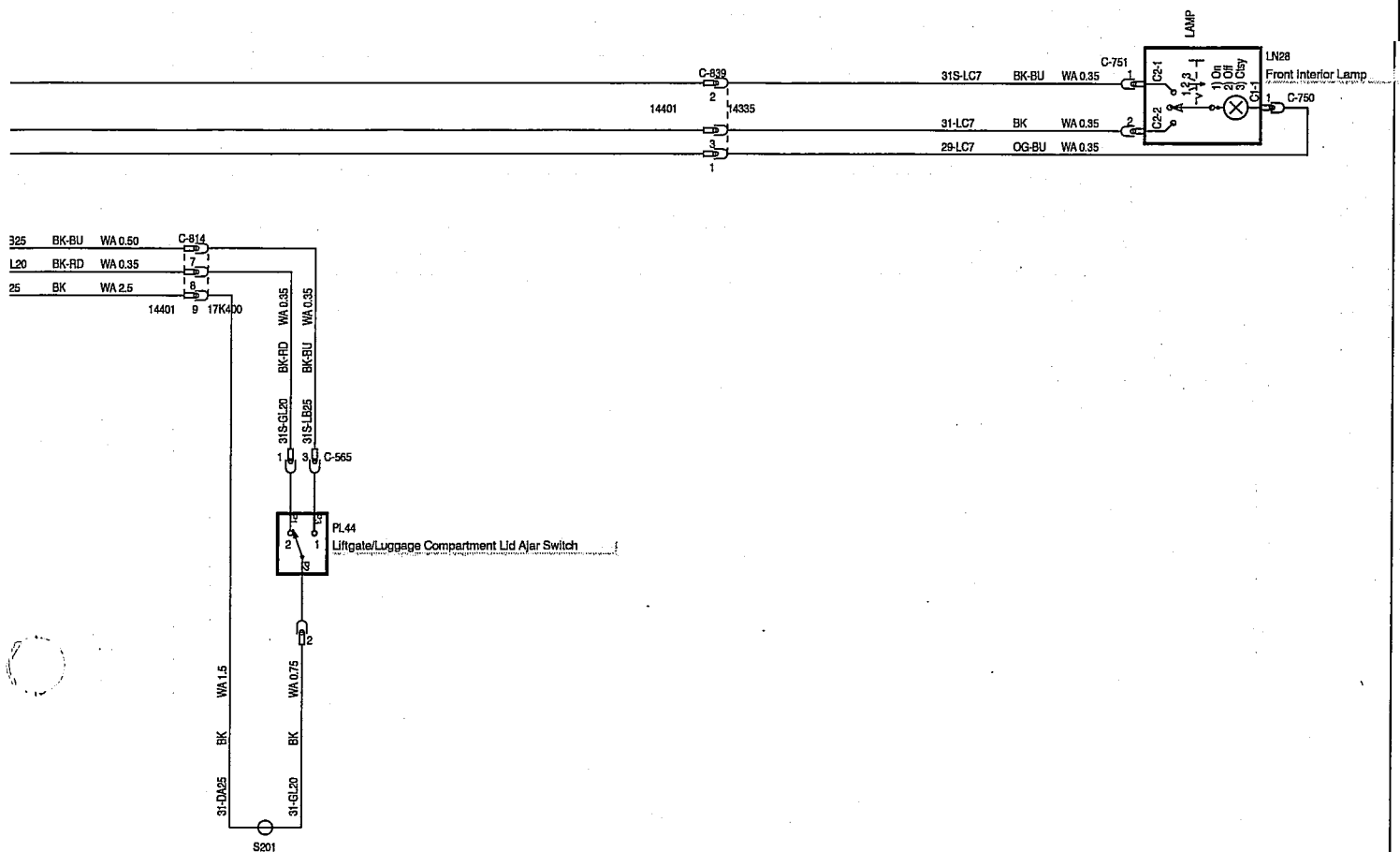
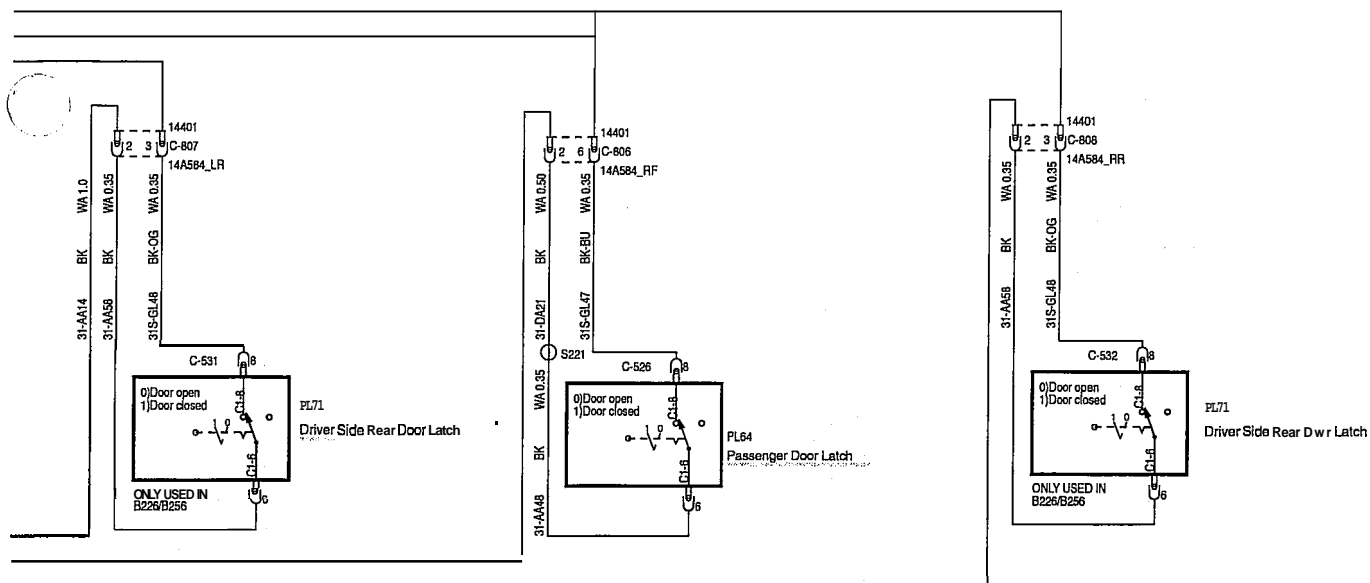


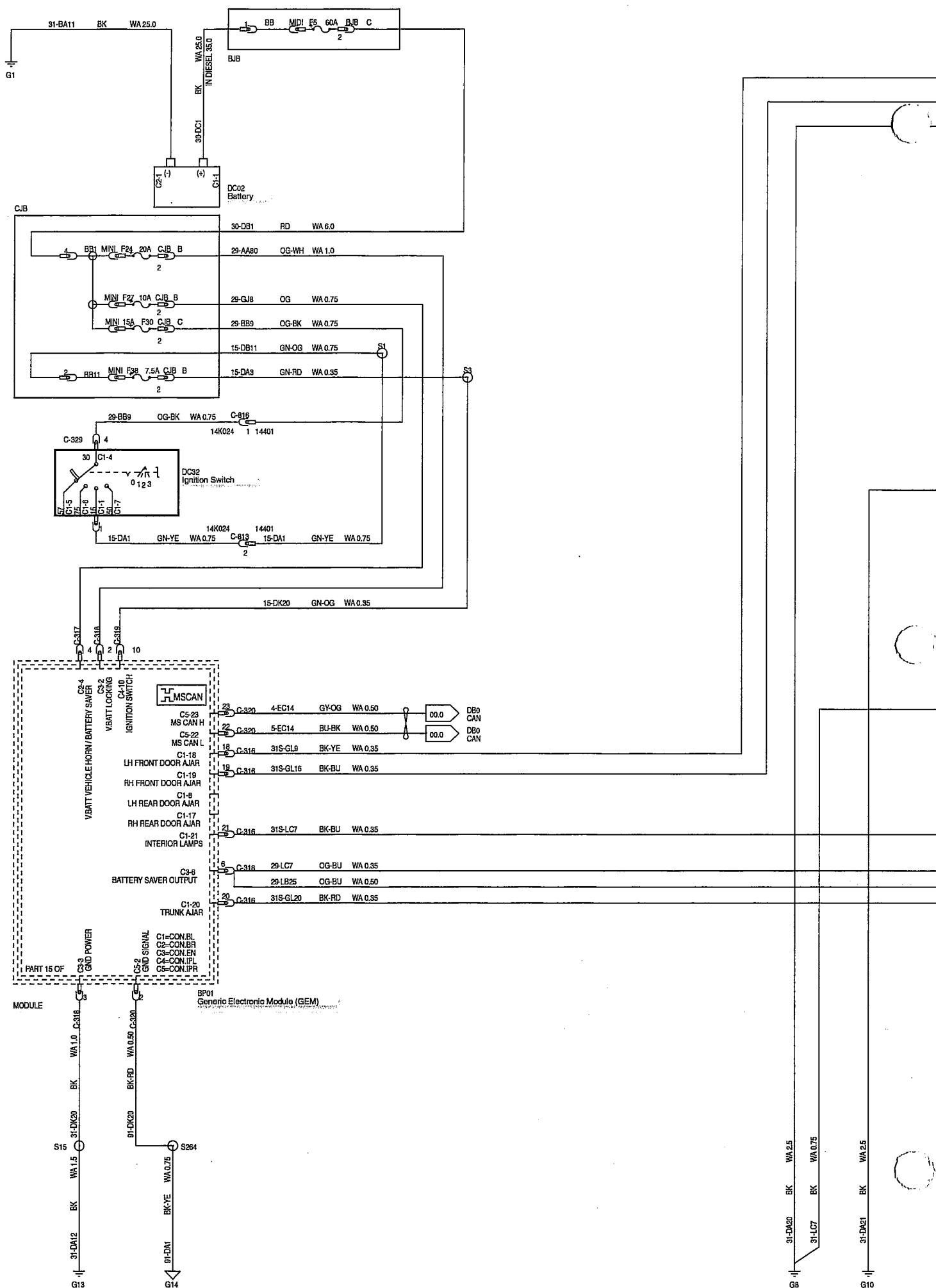


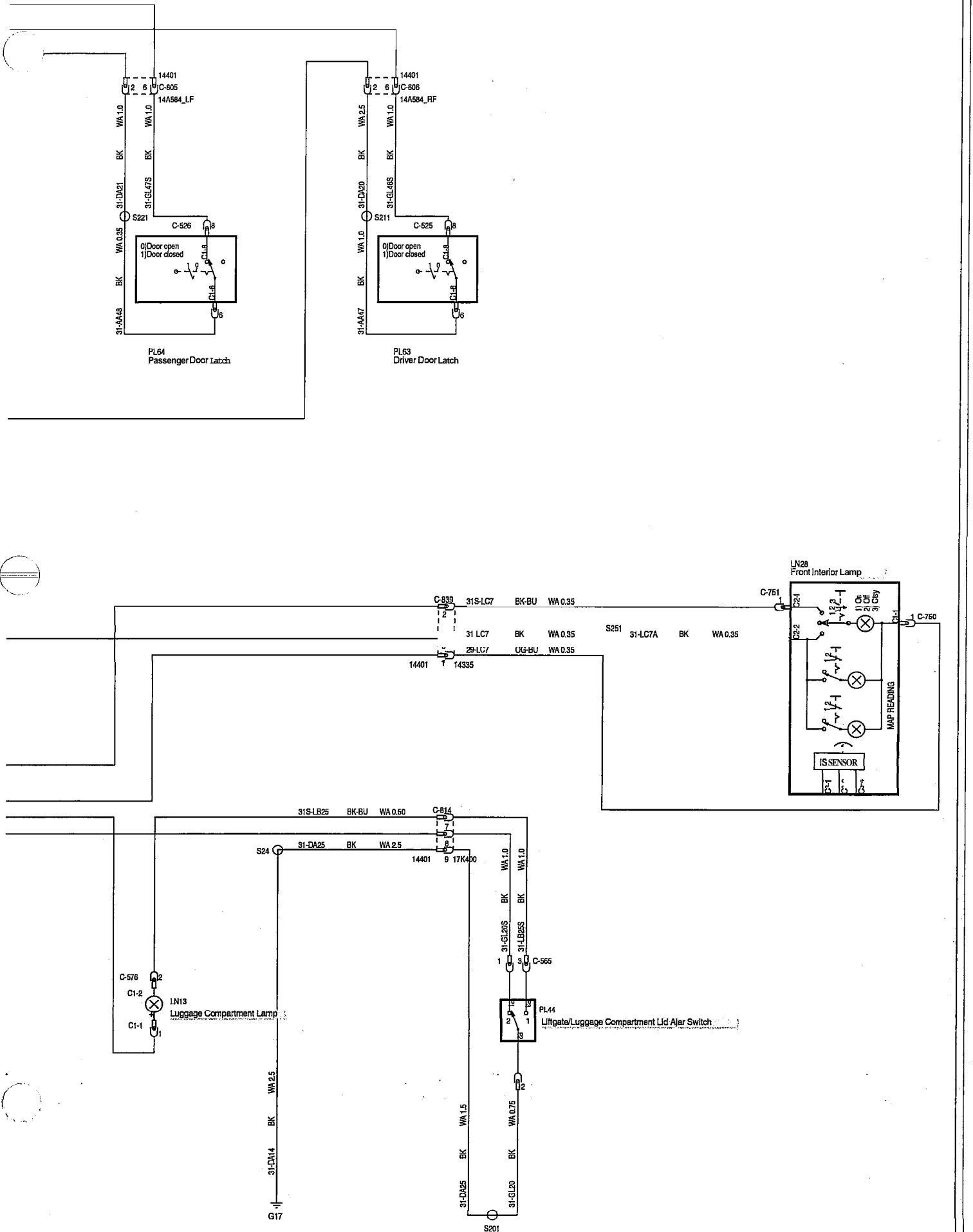
325	BK-BU	WA 0.50	C-81
L20	BK-RD	WA 0.35	C-7
25	BK	WA 2.5	C-7













 1 29-LC7 OG-BU WA0.35
78GG-14488-SA
C-750
TO FROM DOME LAMP
HARNESS 14335

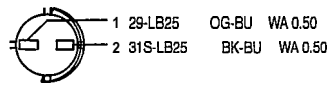
 1 29-LC17 OG-YE WA0.35

86AG-14488-JA

C-752

TO REAR DOME LAMP

HARNESS14335

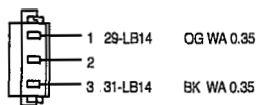


91AG-13K370-AB

C-576

TO LUGGAGE COMPARTMENT LAMP

HARNESS14401

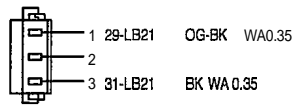


94BG-14469-LCB

C-491

TO LEFT REAR MAP-READING LAMP

HARNESS 14335



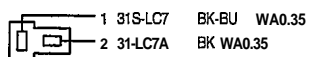
94BG-14489-LCB

C-490

TO RIGHT REAR MAP-READING LAMP

HARNESS 14335

PIN 2 => 31-LC7 BK 0.35 WA

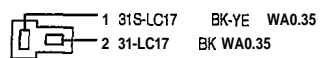


81AG-14488-GA

C-751

TO FRONT DOME LAMP

HARNESS 14335

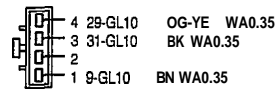


81AG-14488-GA

C-753

TO REAR DOME LAMP

HARNESS 14335



2S7T-14489-DA

G769

TO FRONT DOME LAMP (ST150)

HARNESS 14335



SECTION 417-04 Daytime Running Lamps (DRL)

VEHICLE APPLICATION: 2006.0 Fiesta

CONTENTS

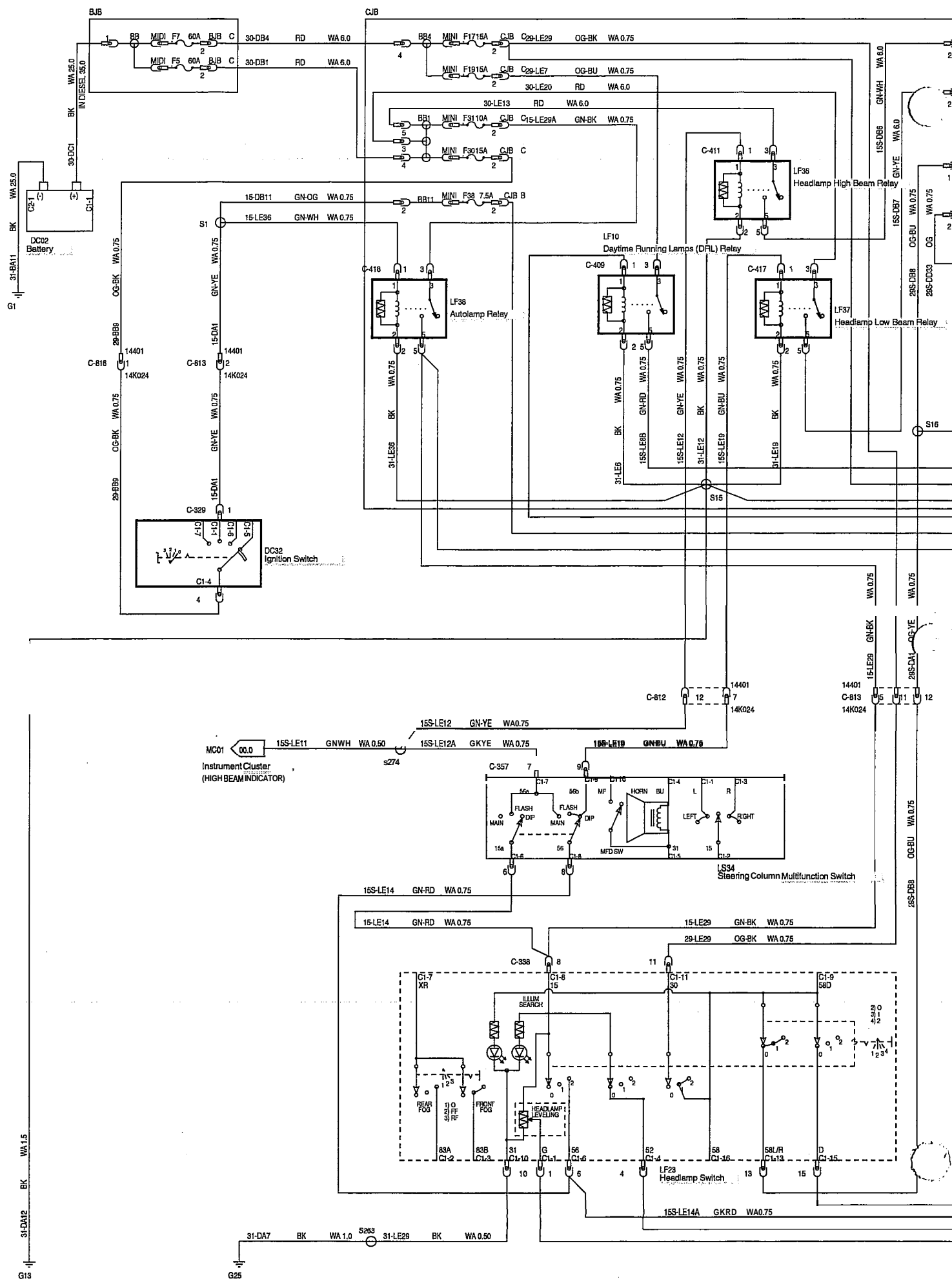
PAGE

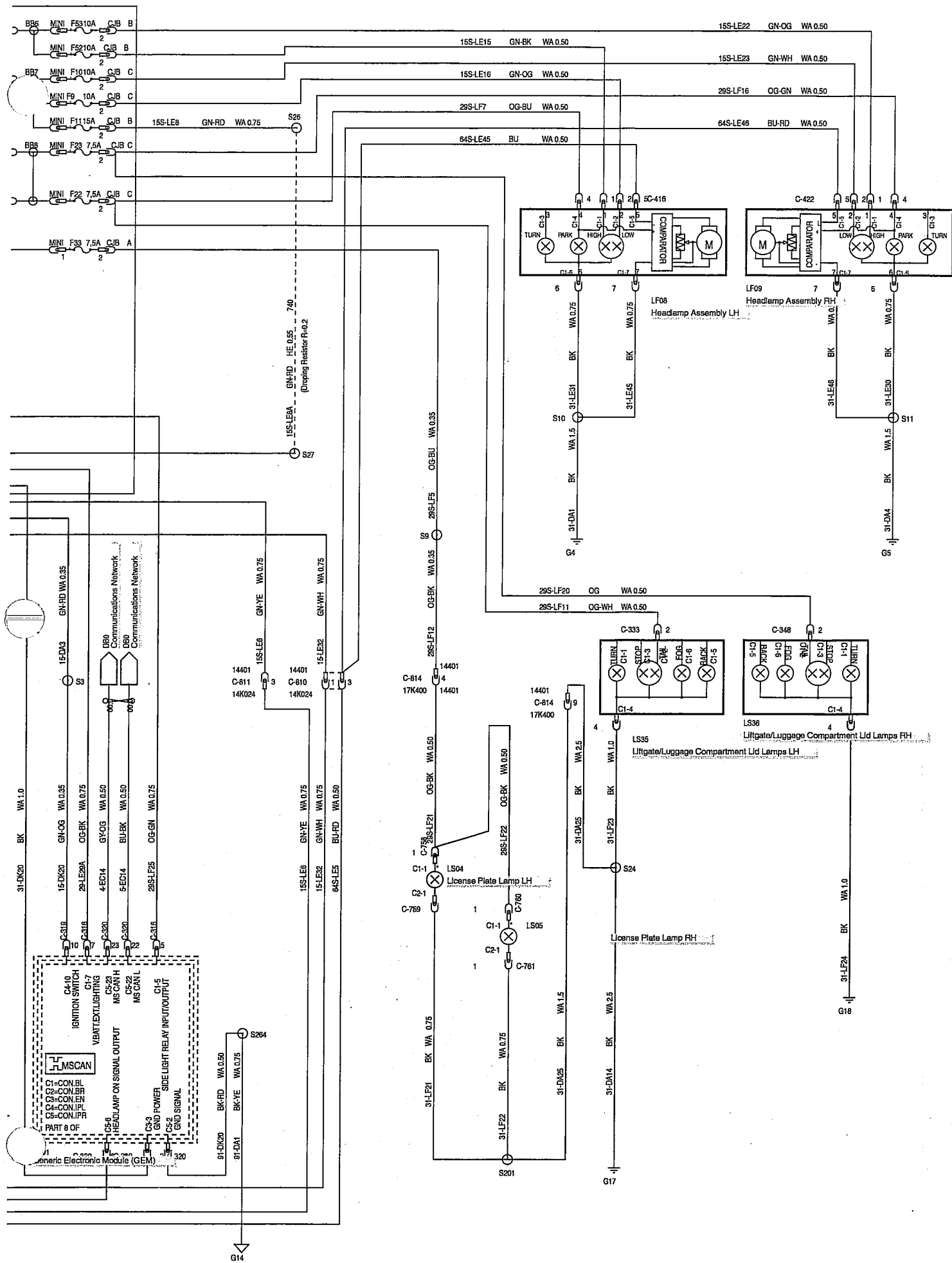
SCHEMATICS

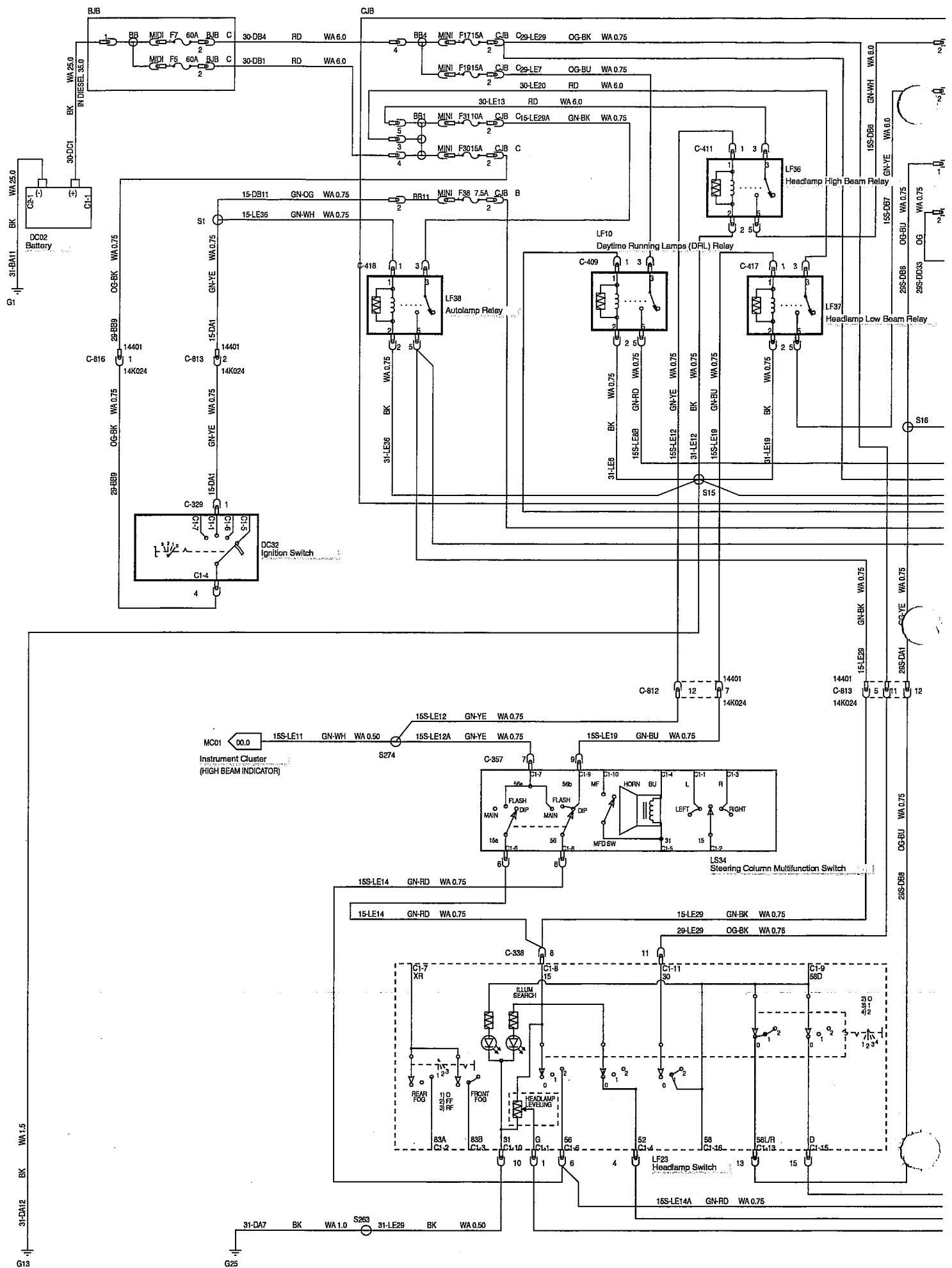
Daytime Running Lamps (DRL).....	417-04-2
Daytime Running Lamps (DRL) — 2.0L Duratec-ST (MI4).....	417-04-4

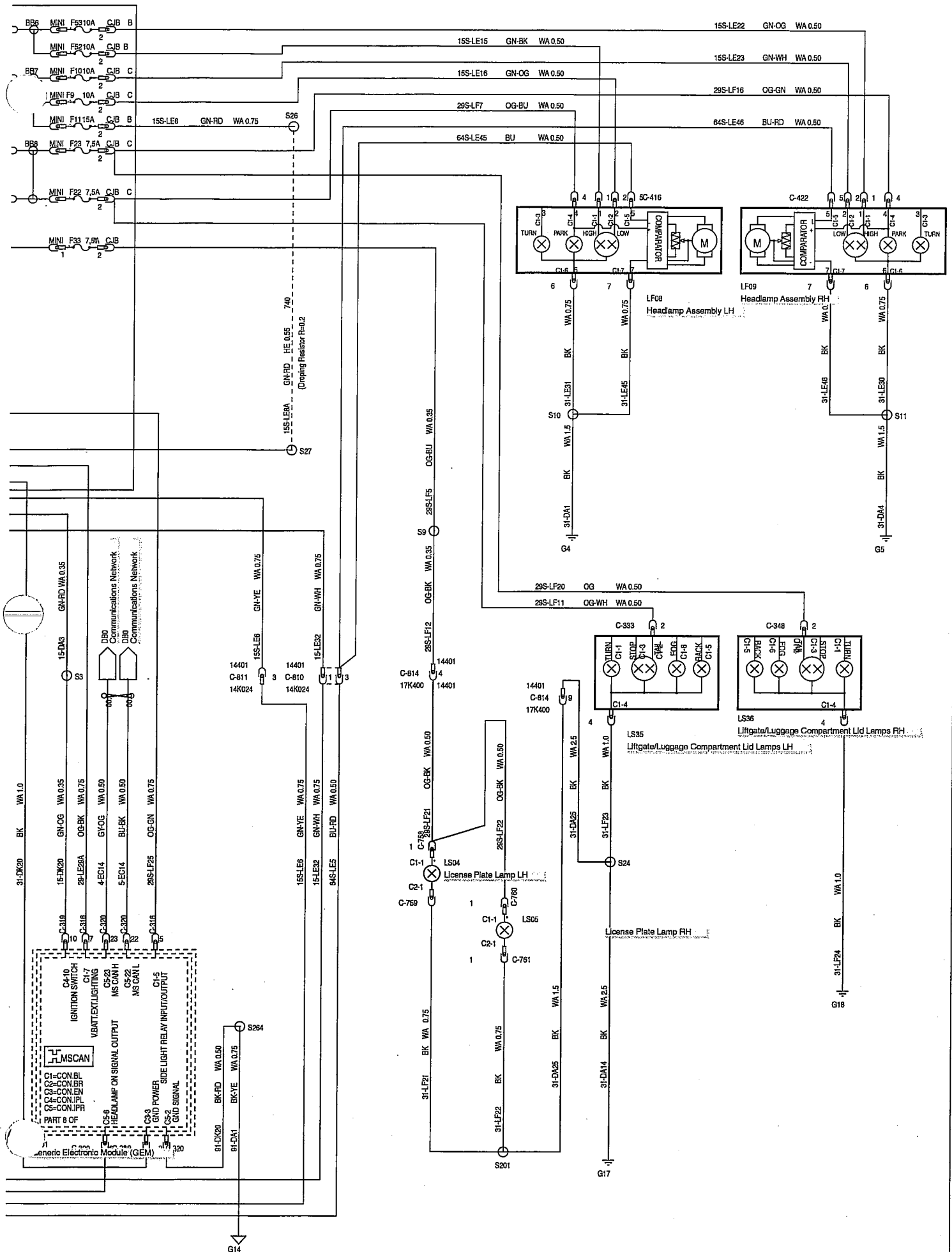
CONNECTORS

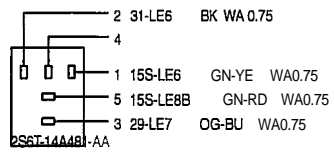
Daytime Running Lamps (DRL) Relay.....	417-04-6
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C-409
TO DAYTIME RUNNING LIGHT RELAY
HARNESS 14401

SECTION 418-00 Module Communications Network

VEHICLE APPLICATION:2006.0 Fiesta

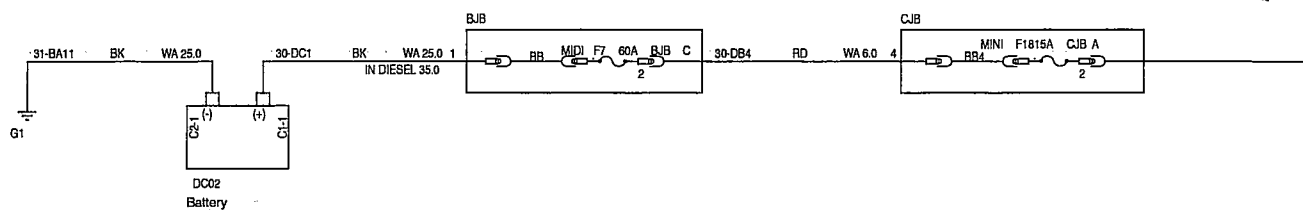
CONTENTS PAGE

SCHEMATICS

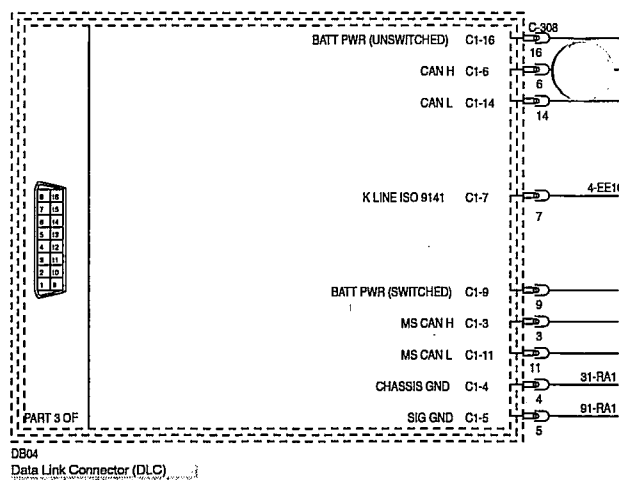
Diagnostics.....	418-00-2
Communications Network — 1.4L Duratec-16V (Sigma), Vehicles With: Automated Gearshift.....	418-00-4
Communications Network — 1.4L Duratorq-TDCi (DV) Diesel, Vehicles With: Automated Gearshift.....	418-00-6
Communications Network — Vehicles With: 4-Speed Automatic Transmission (AW81-40).....	418-00-8
Communications Network — 1.4L Duratorq-TDCi (DV) Diesel.....	418-00-10
Communications Network — 1.4L Duratorq-TDCi (DV) Diesel, VIN Plate Emission Level Code: S, Vehicles With: Anti-Lock Brake System (ABS).....	418-00-12
Communications Network — 1.3L Duratec-8V (Rocam)/1.25L Duratec-16V (Sigma)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma).....	418-00-14
Communications Network — 1.4L Duratorq-TDCi (DV) Diesel, VIN Plate Emission Level Code: S, Vehicles With: Stability Assist/Anti-Lock Brake System (ABS).....	418-00-16
Communications Network — 1.6L Duratorq-TDCi (DV) Diesel, Vehicles With: Anti-Lock Brake System (ABS).....	418-00-18
Communications Network — 1.6L Duratorq-TDCi (DV) Diesel, Vehicles With: Stability Assist/Anti-Lock Brake System (ABS).....	418-00-20
Communications Network — 1.6L Duratorq-TDCi (DV) Diesel, Vehicles With: Traction Control/Stability Assist.....	418-00-22
Communications Network — 1.6L Duratorq-TDCi (DV) Diesel, Vehicles With: Anti-Lock Brake System (ABS).....	418-00-24
Communications Network — 1.4L Duratorq-TDCi (DV) Diesel, Vehicles With: Stability Assist/Anti-Lock Brake System (ABS).....	418-00-26
Communications Network — 1.4L Duratorq-TDCi (DV) Diesel, Vehicles With: Anti-Lock Brake System (ABS).....	418-00-28
Communications Network — 1.3L Duratec-8V (Rocam)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma), Vehicles With: Stability Assist/Anti-Lock Brake System (ABS).....	418-00-30
Communications Network — 1.3L Duratec-8V (Rocam)/1.4L Duratec-16V (Sigma)/1.6L Duratec-16V (Sigma), Vehicles With: Anti-Lock Brake System (ABS).....	418-00-32
Communications Network — 1.4L Duratorq-TDCi (DV) Diesel.....	418-00-34
Communications Network - Mid-Speed (MS) Controller Area Network (CAN) Bus — Vehicles Without: Passenger Air Bag Deactivation Switch.....	418-00-36
Communications Network - Mid-Speed (MS) Controller Area Network (CAN) Bus — Vehicles With: Passenger Air Bag Deactivation Switch.....	418-00-38

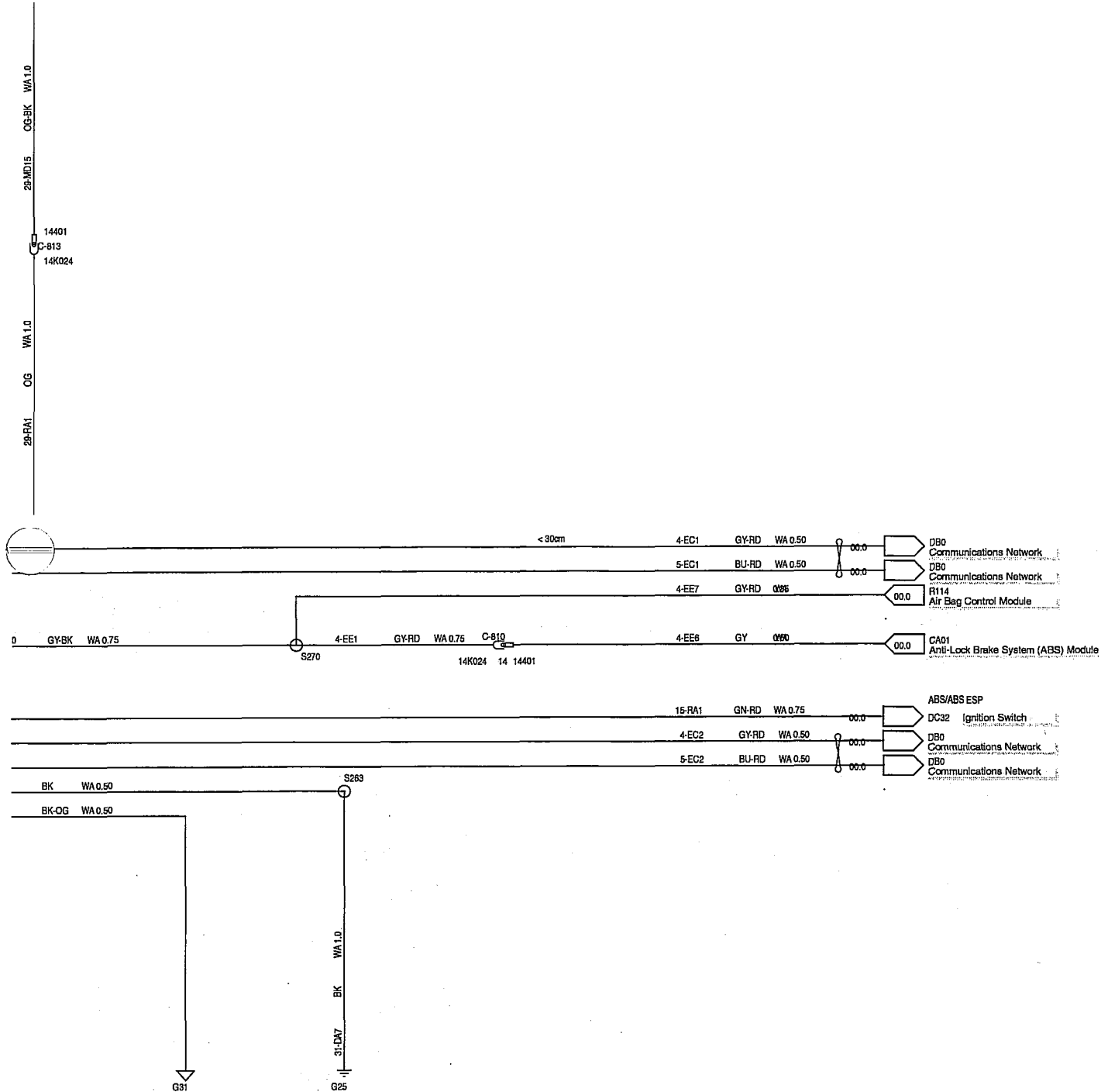
CONNECTORS

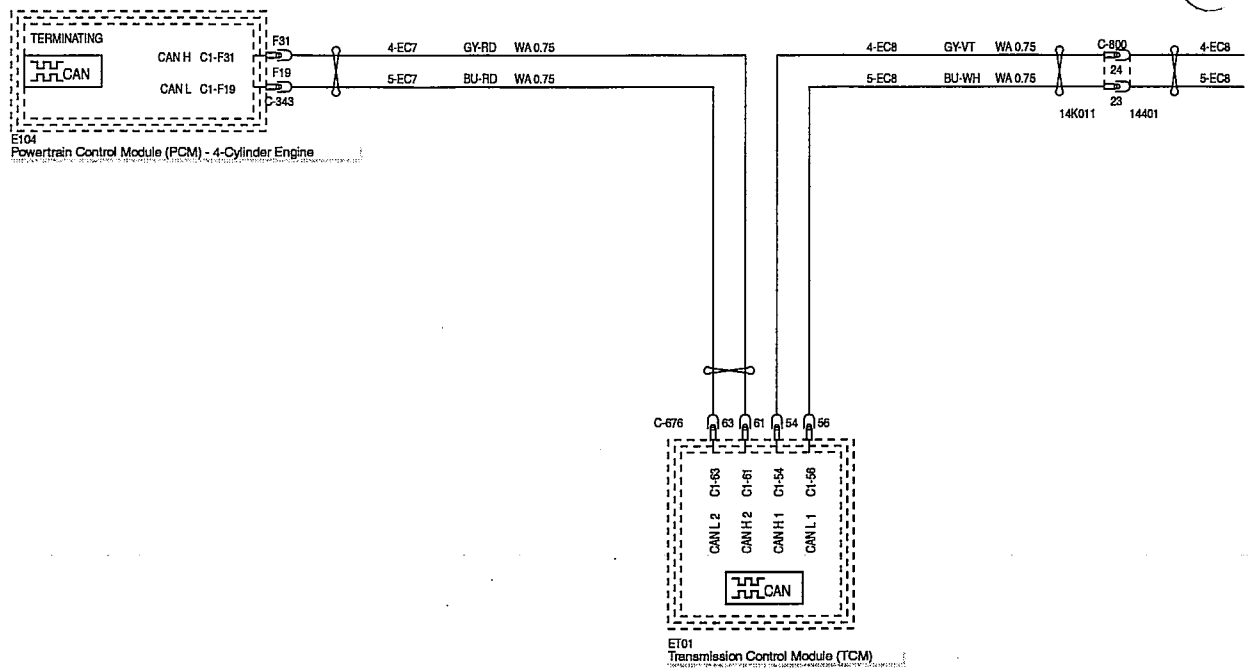
Data Link Connector (DLC).....	418-00-40
--------------------------------	-----------

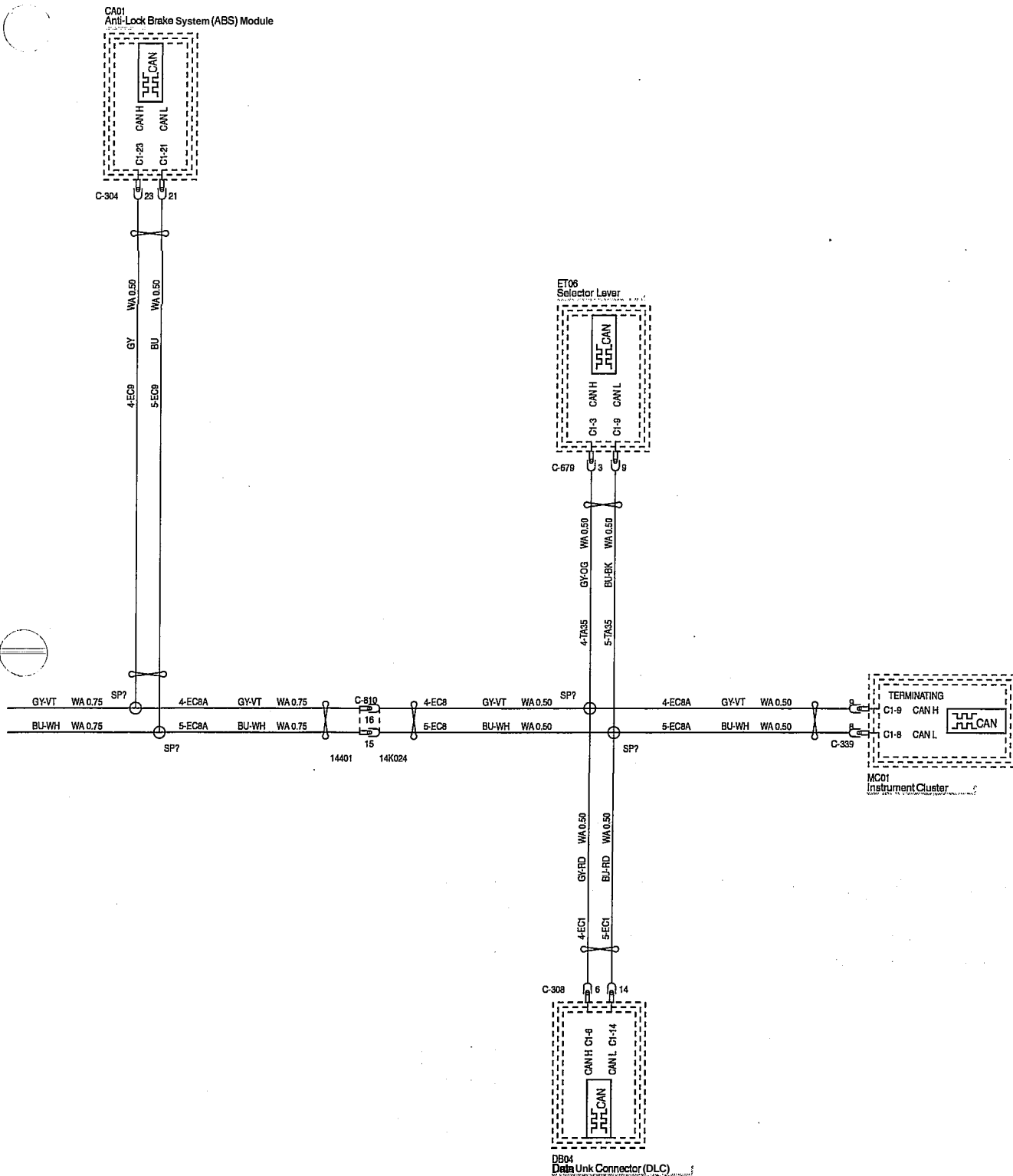


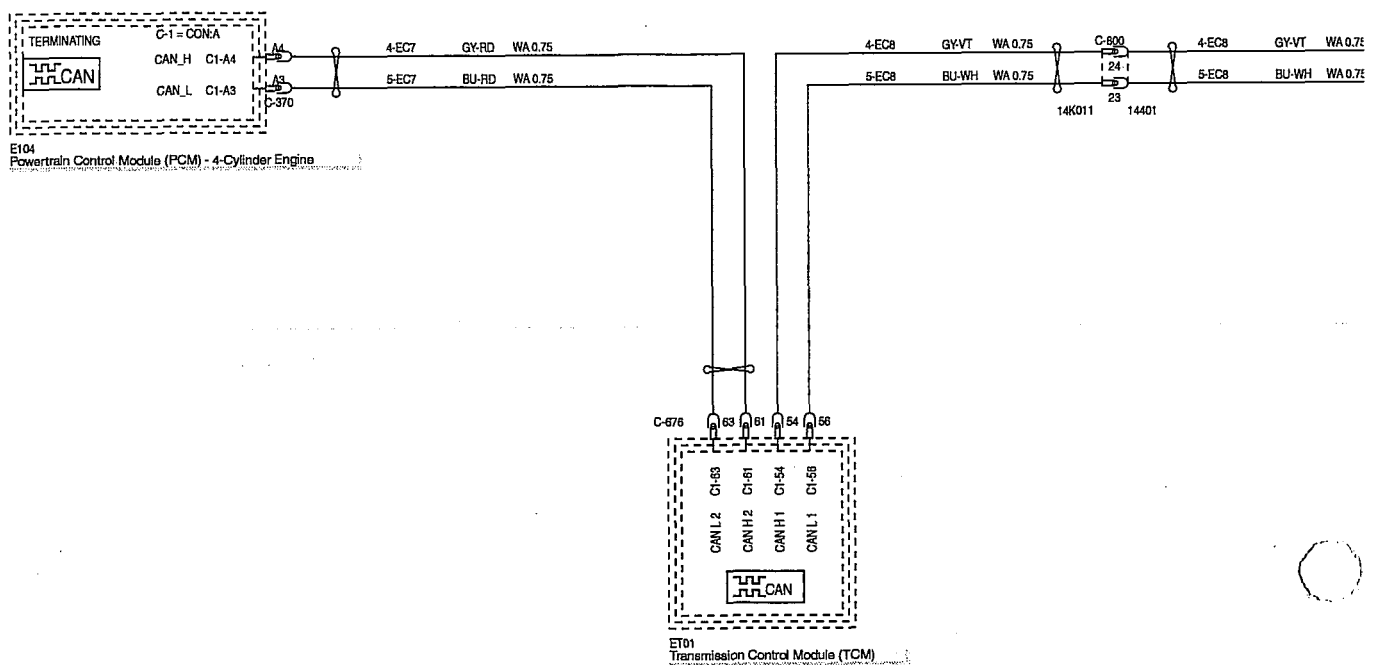
14

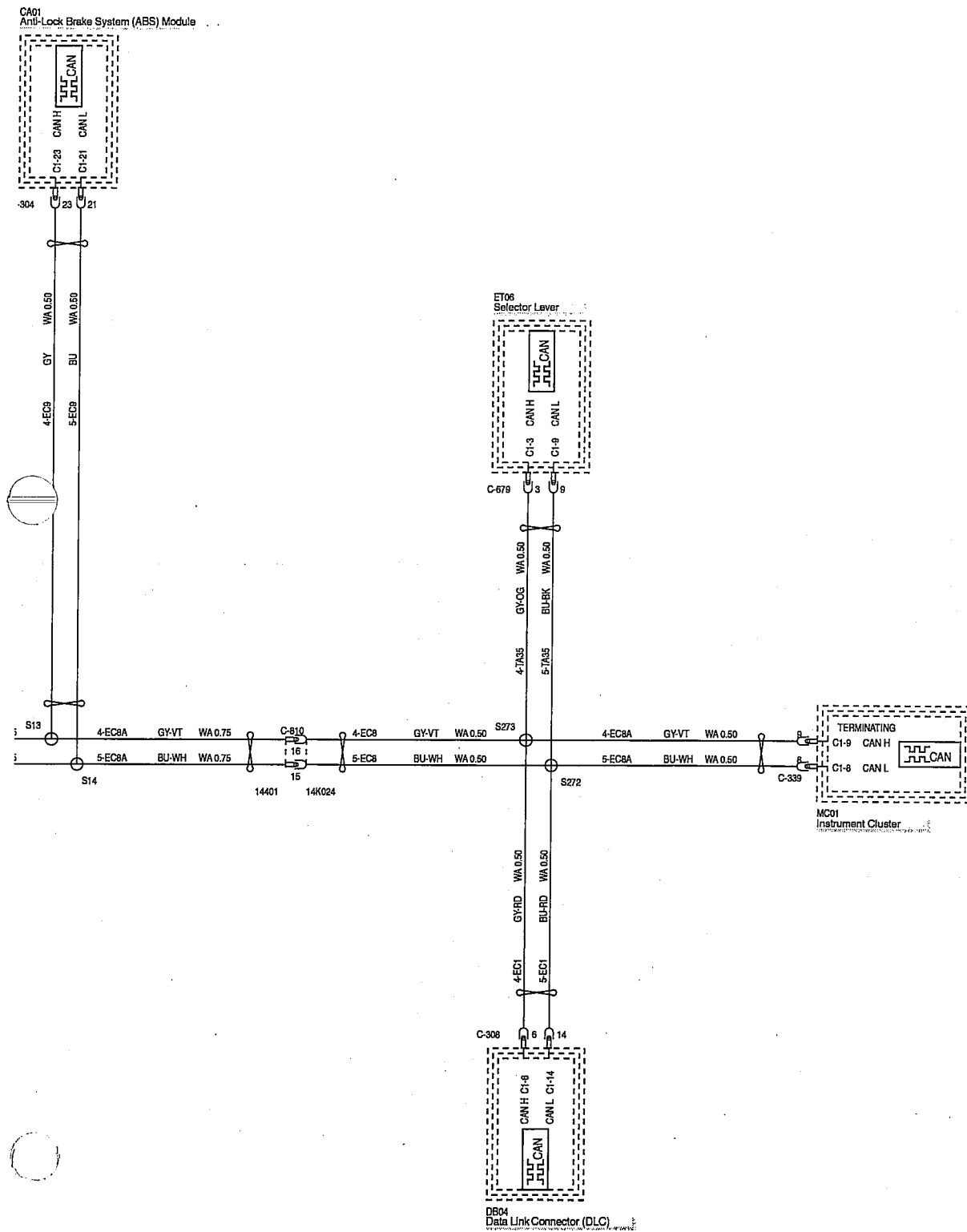


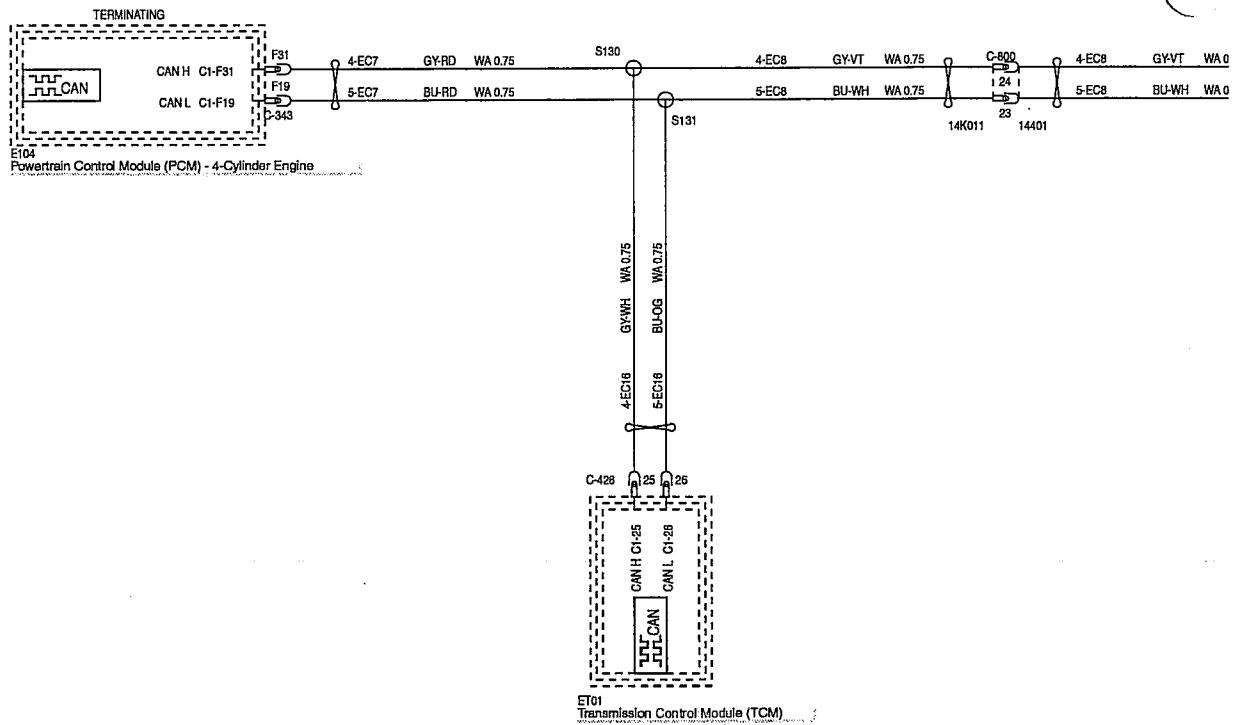


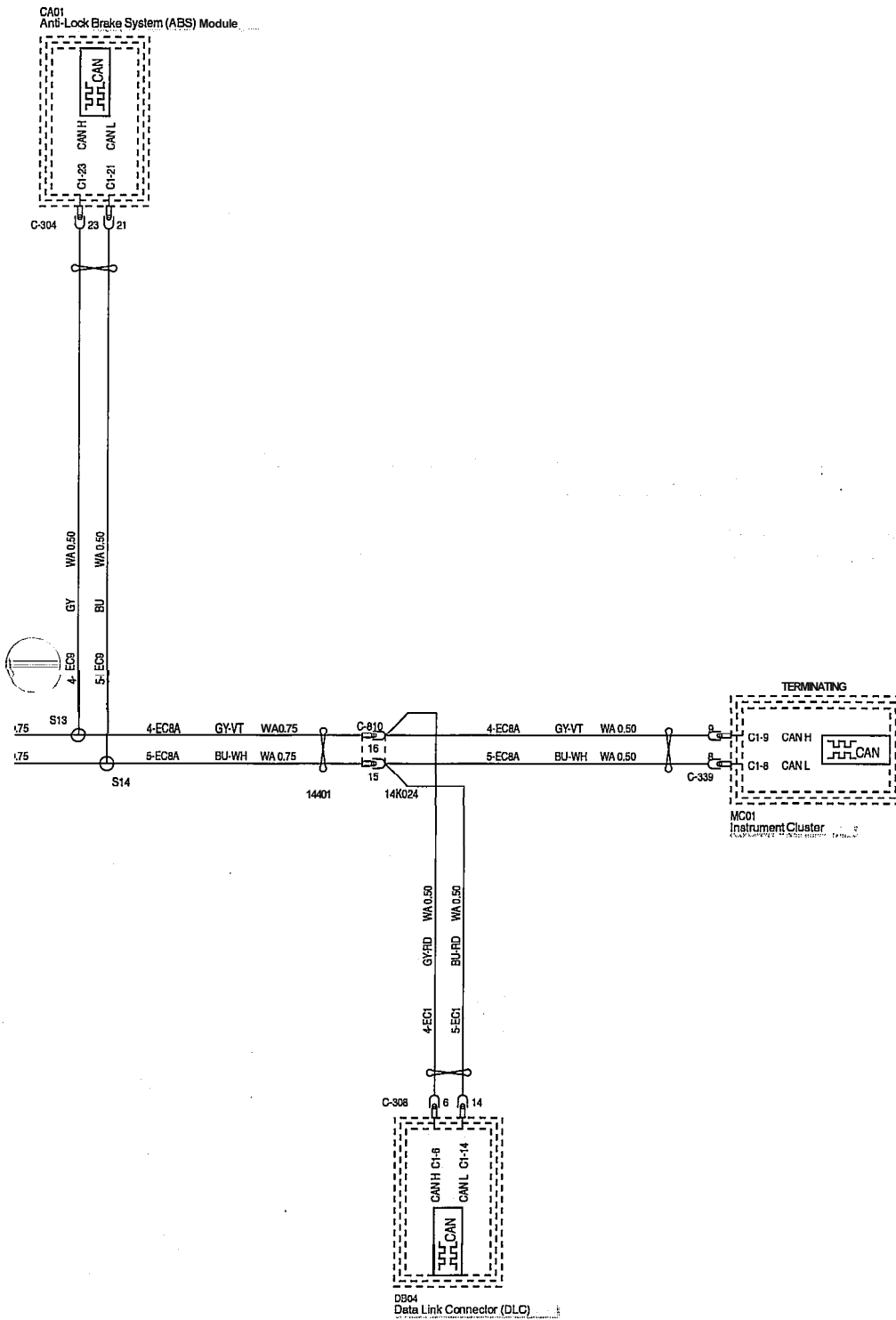


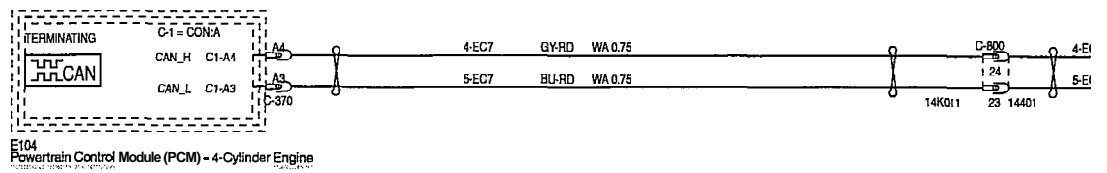


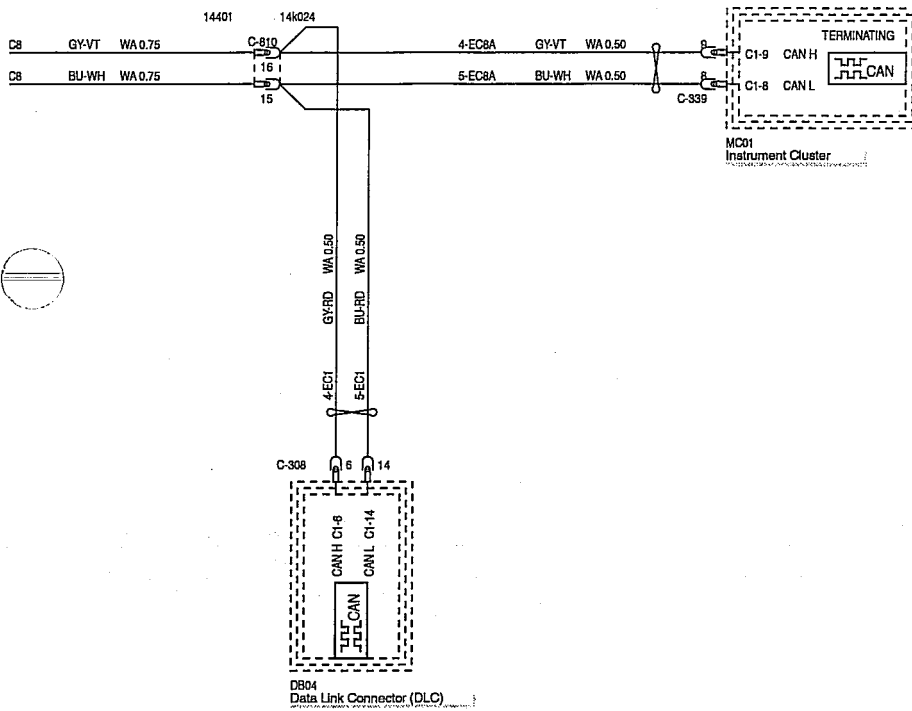






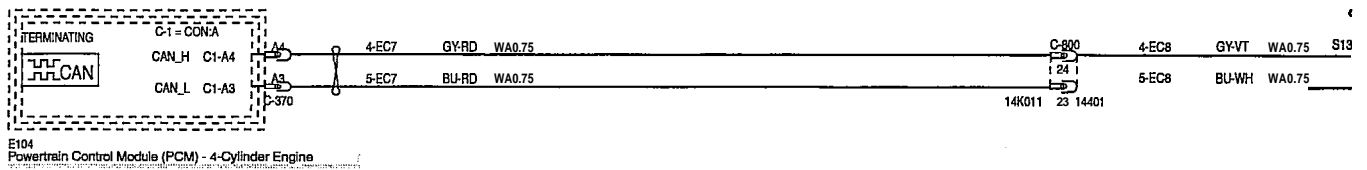




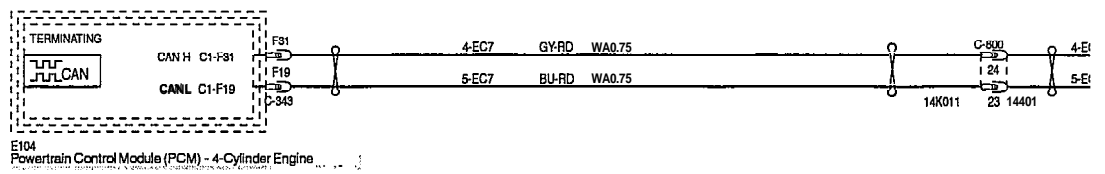


(ABS)

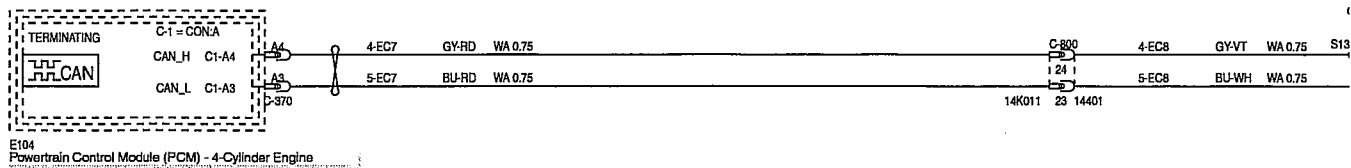
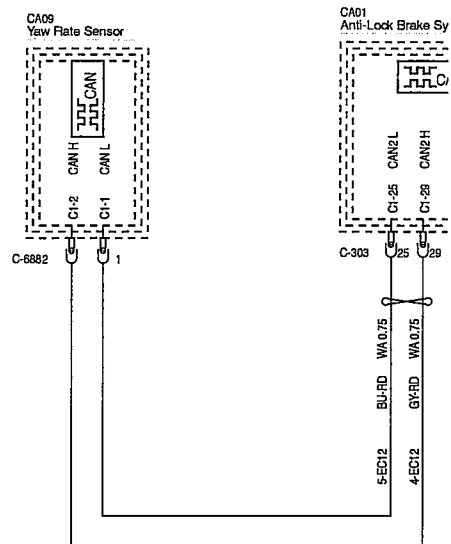
CA01
Anti-Lc
C-304





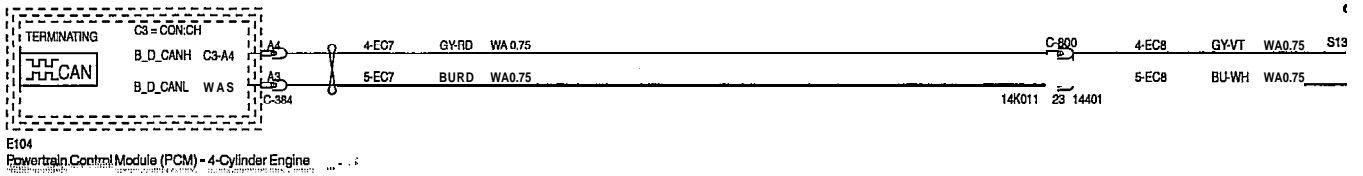


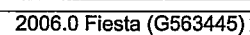
Brake System (ABS)

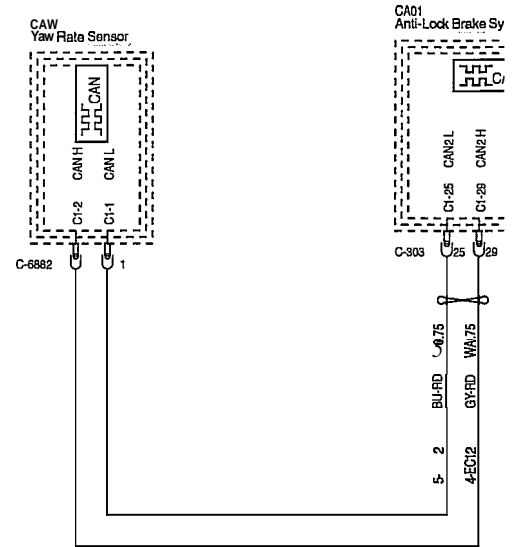
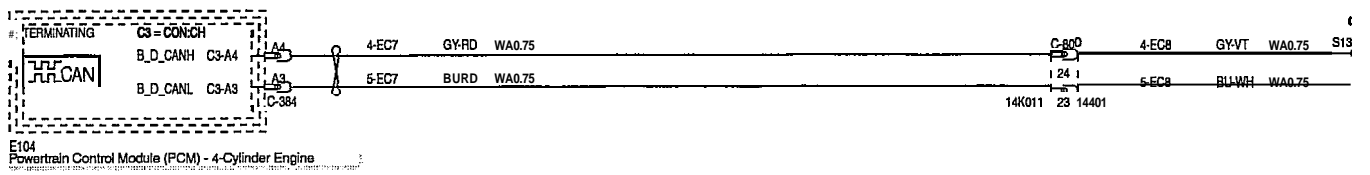


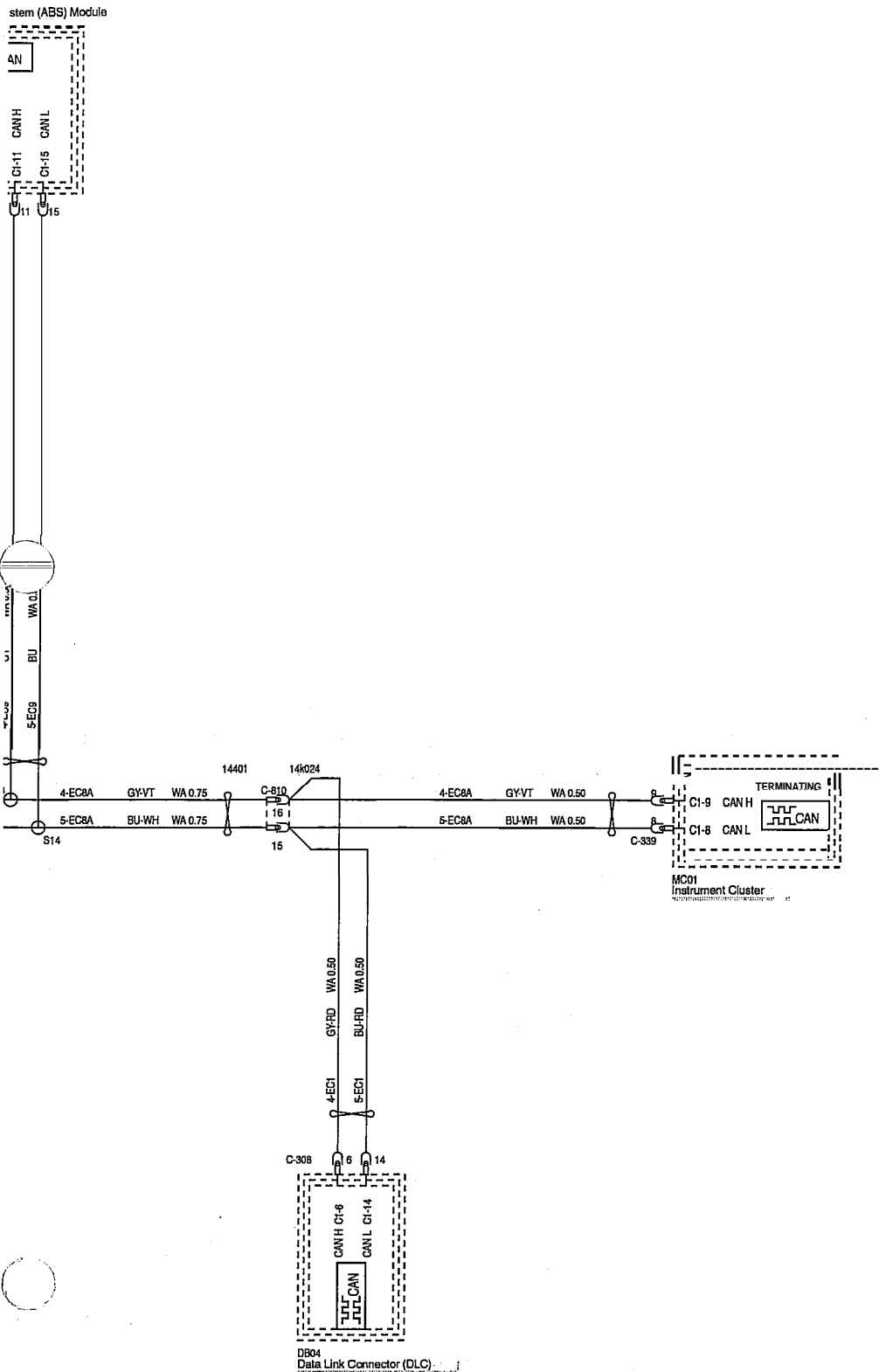


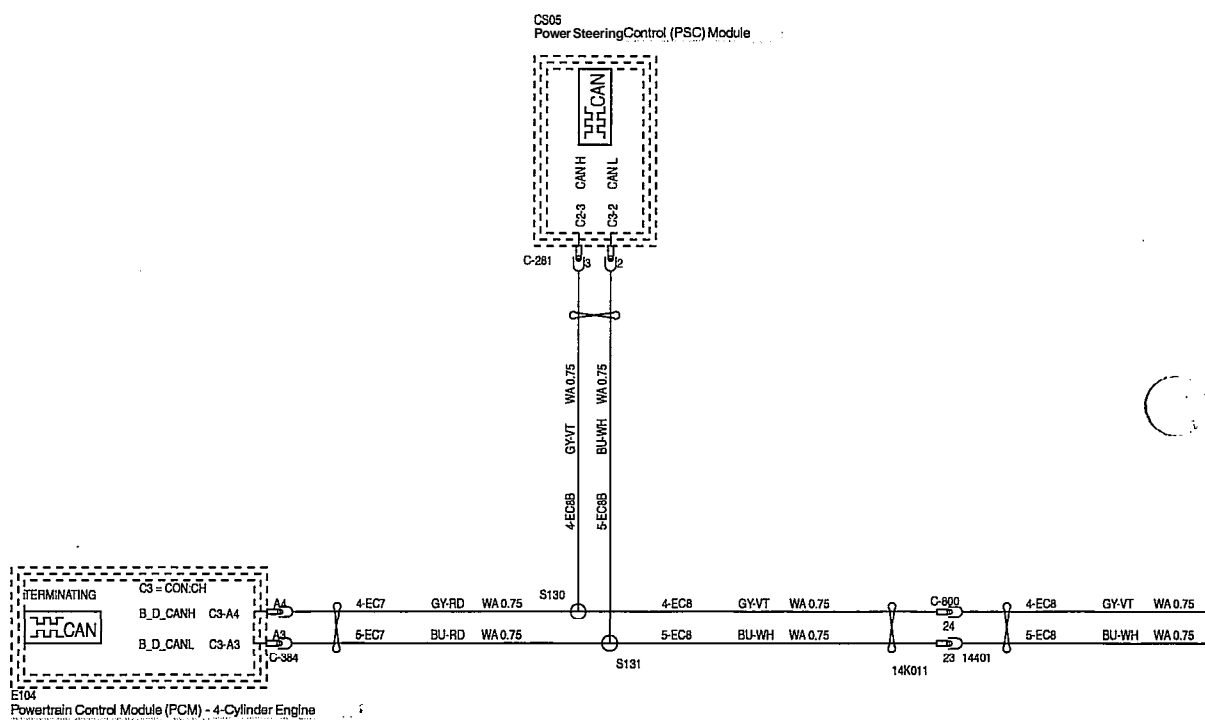
CA01
Anti-Lc
C-304

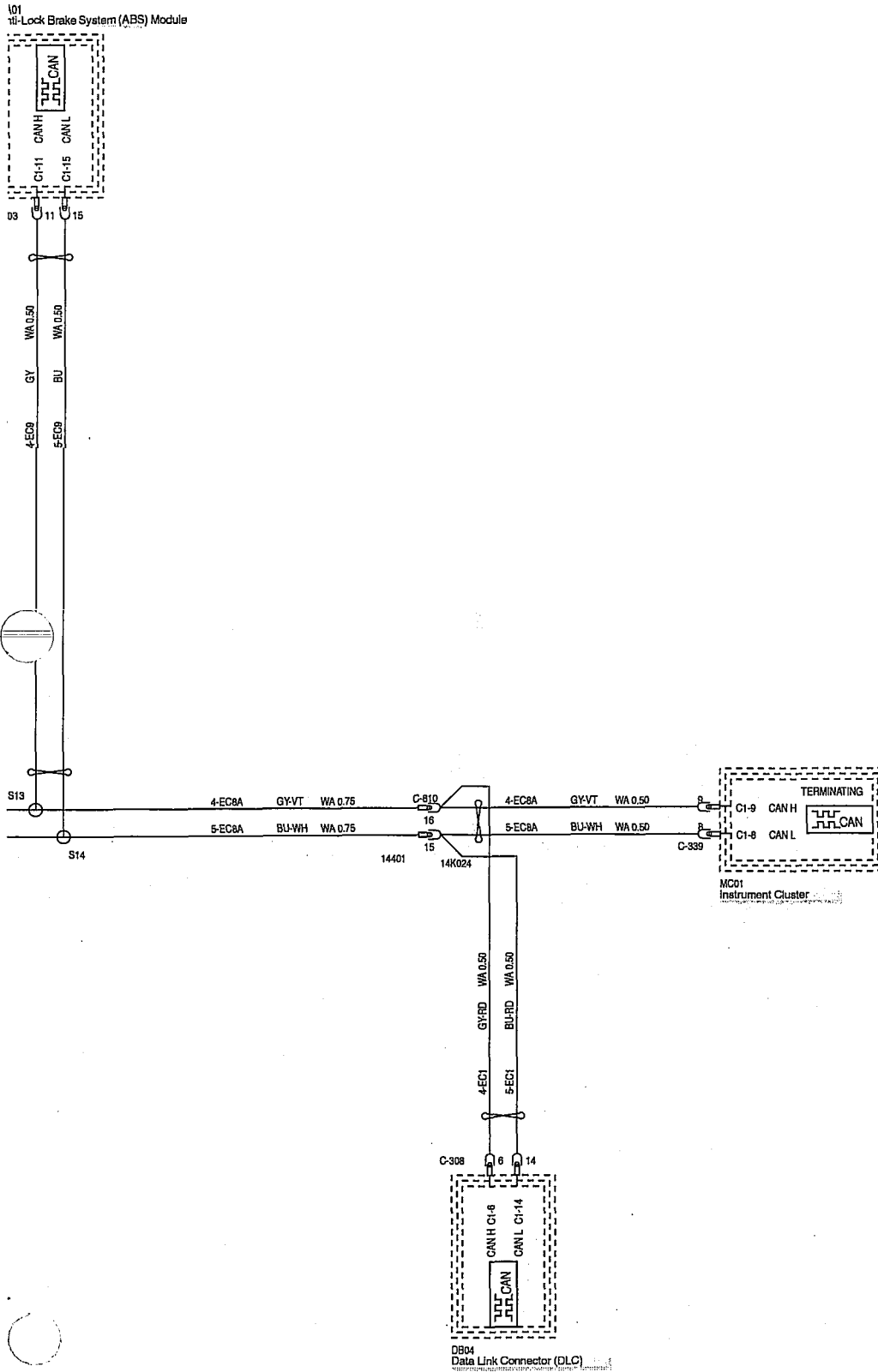


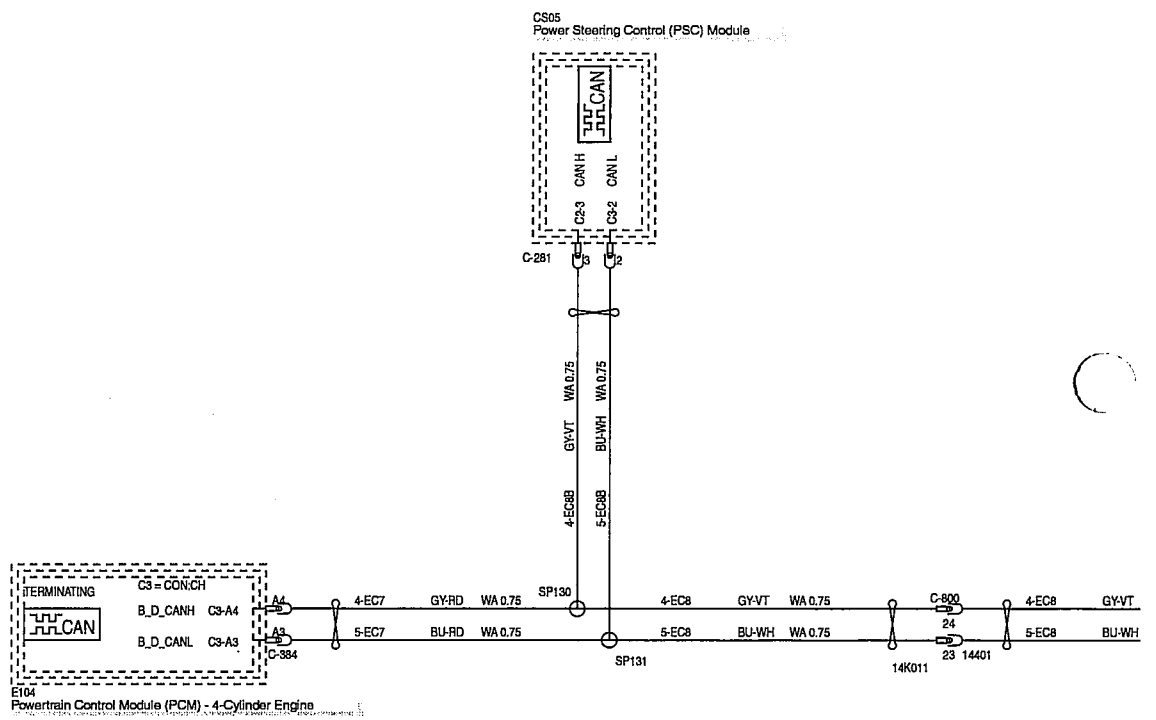


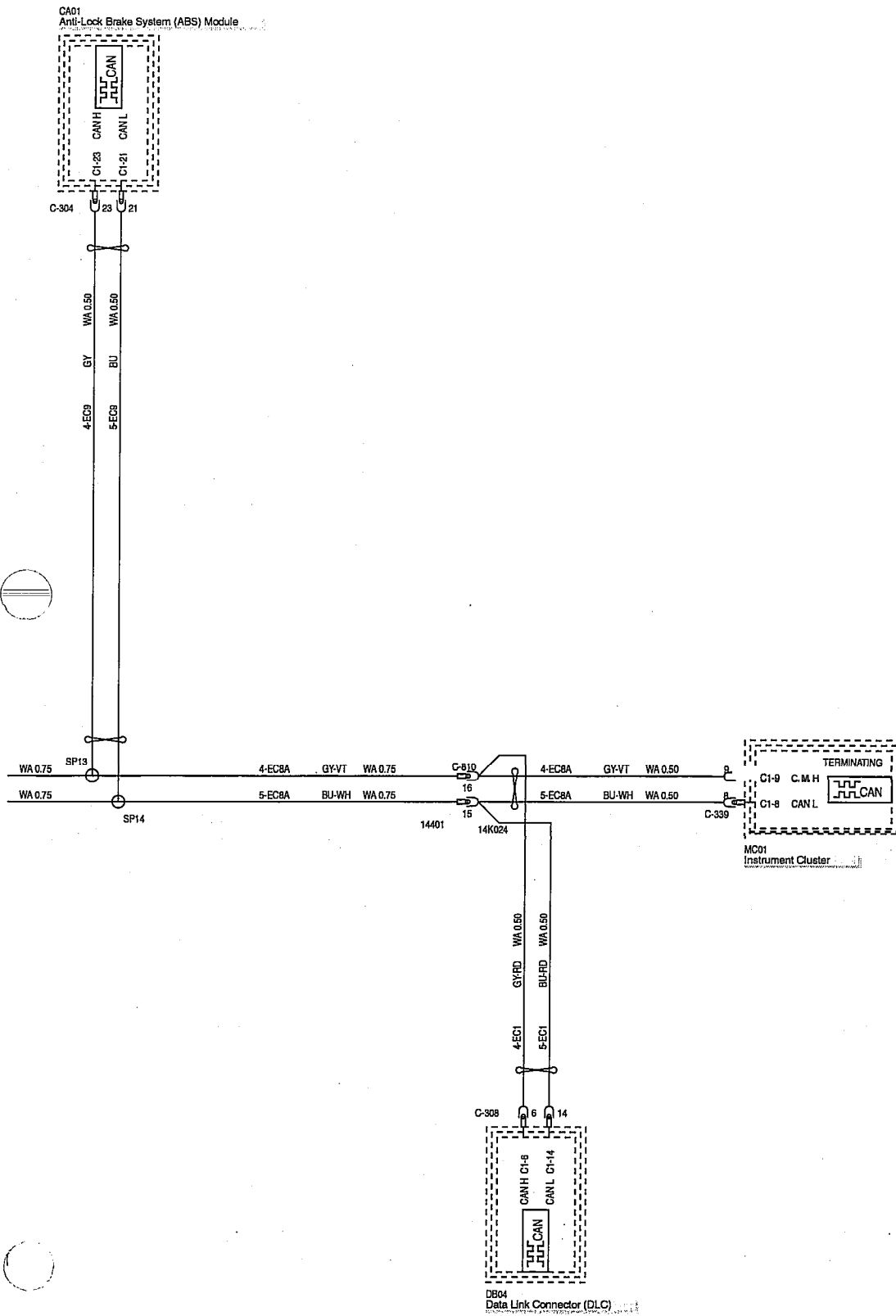


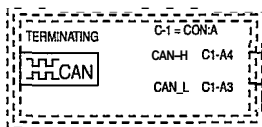




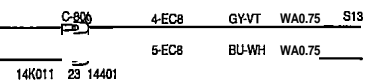
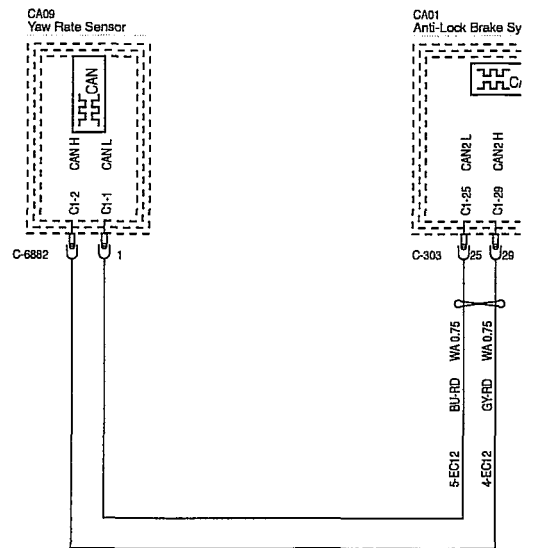


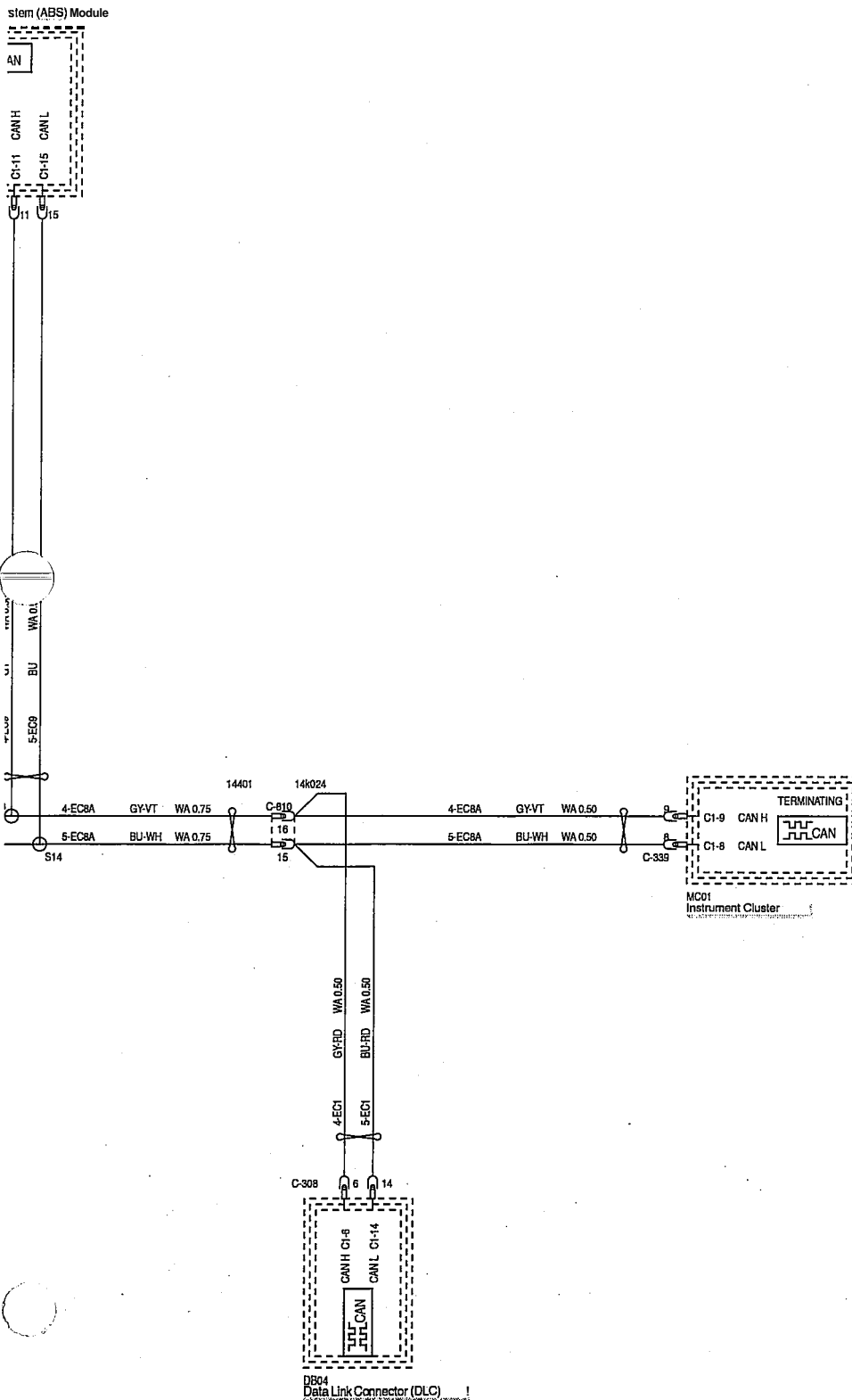






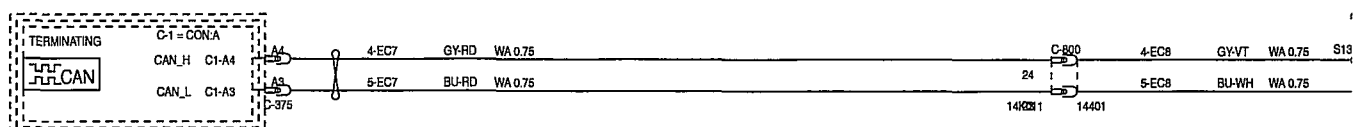
E104
Powertrain Control Module (PCM) - 4-Cylinder Engine





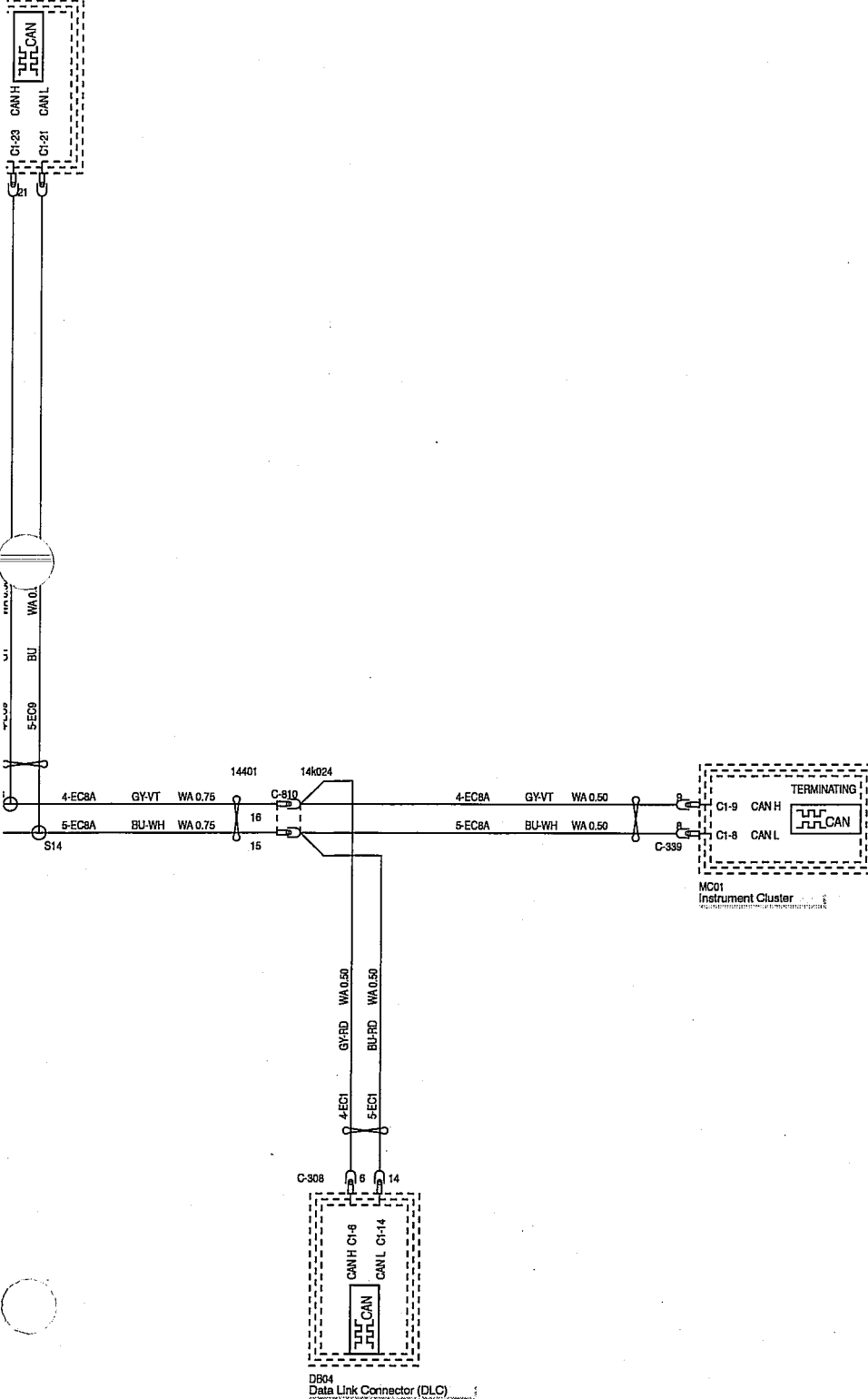
CAOI
Anti-LC

C-30423

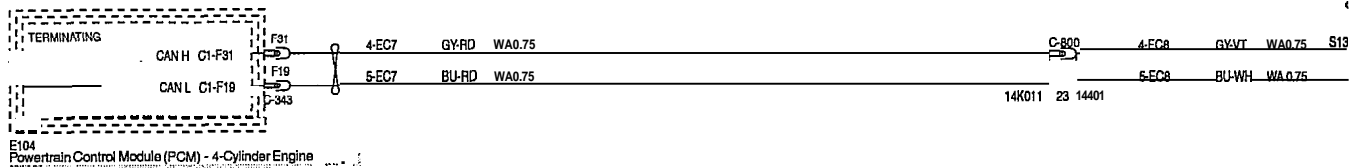


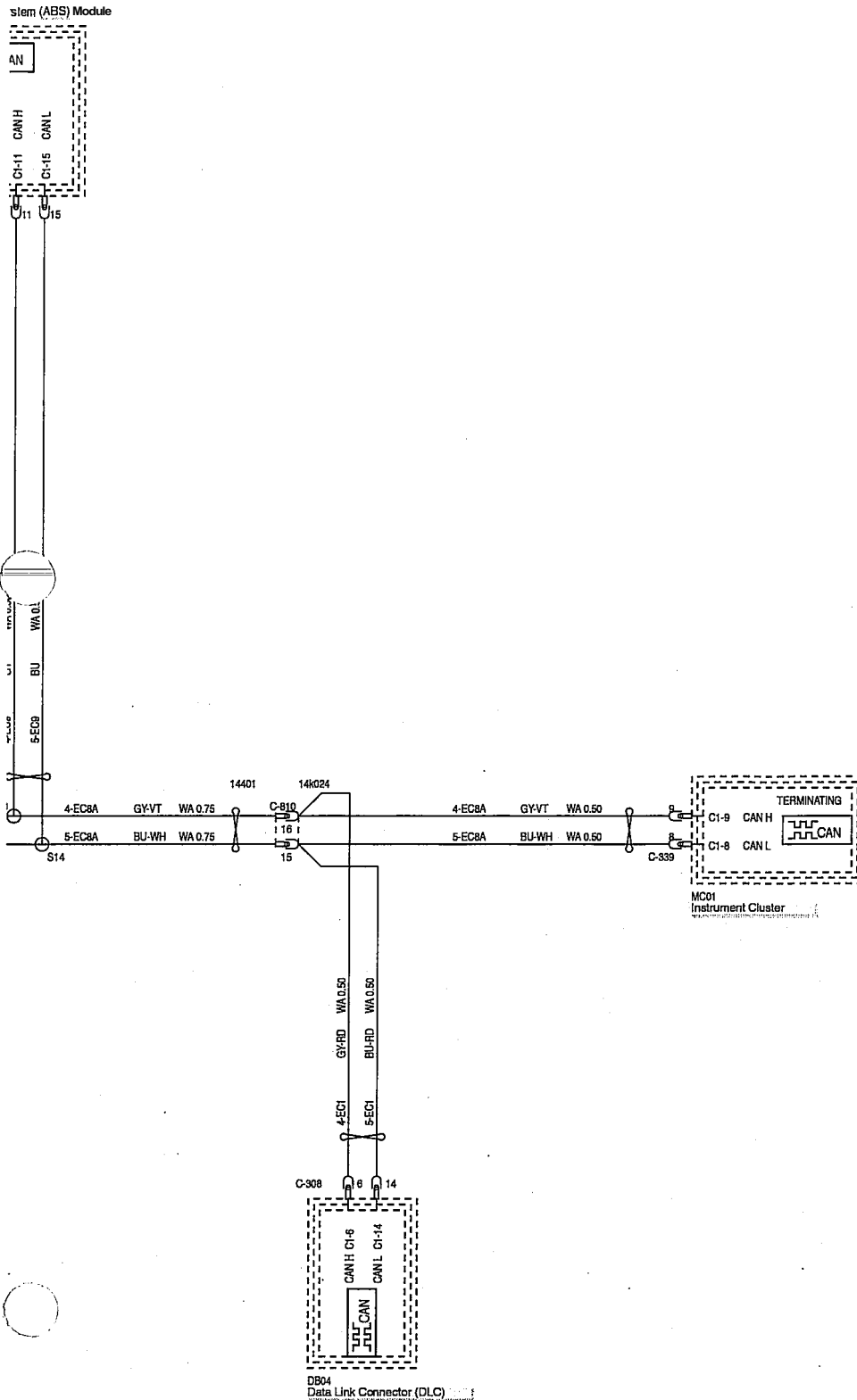
E104
Powertrain Control Module (PCM) - 4-Cylinder Engine

xxk Brake System (ABS) Module



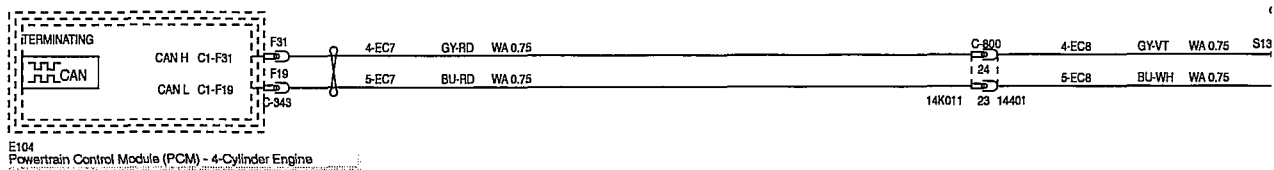
Assist/Anti-Lock Brake System (ABS)

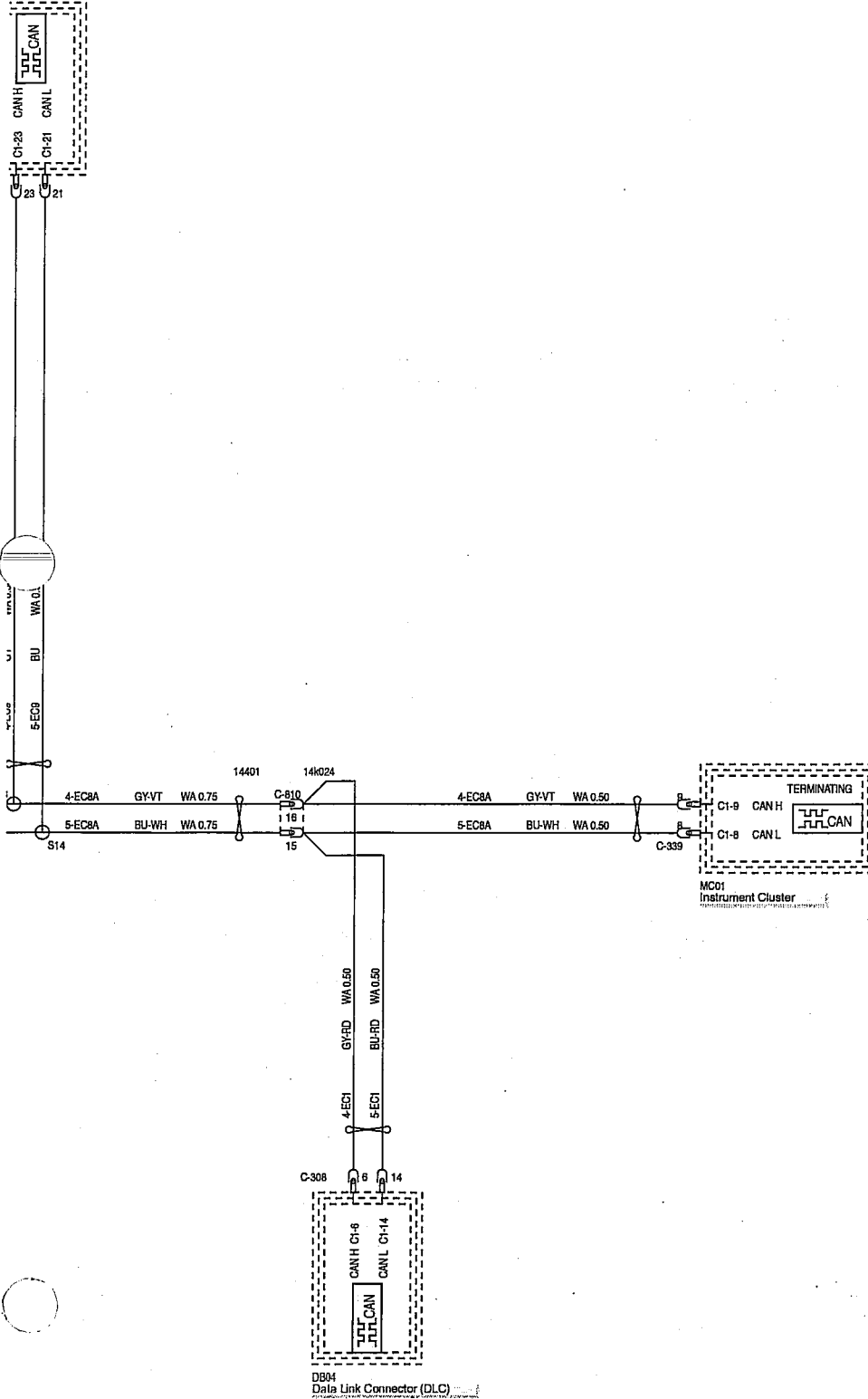


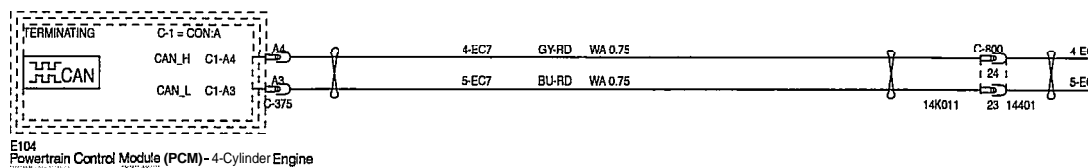


Brake System (ABS)

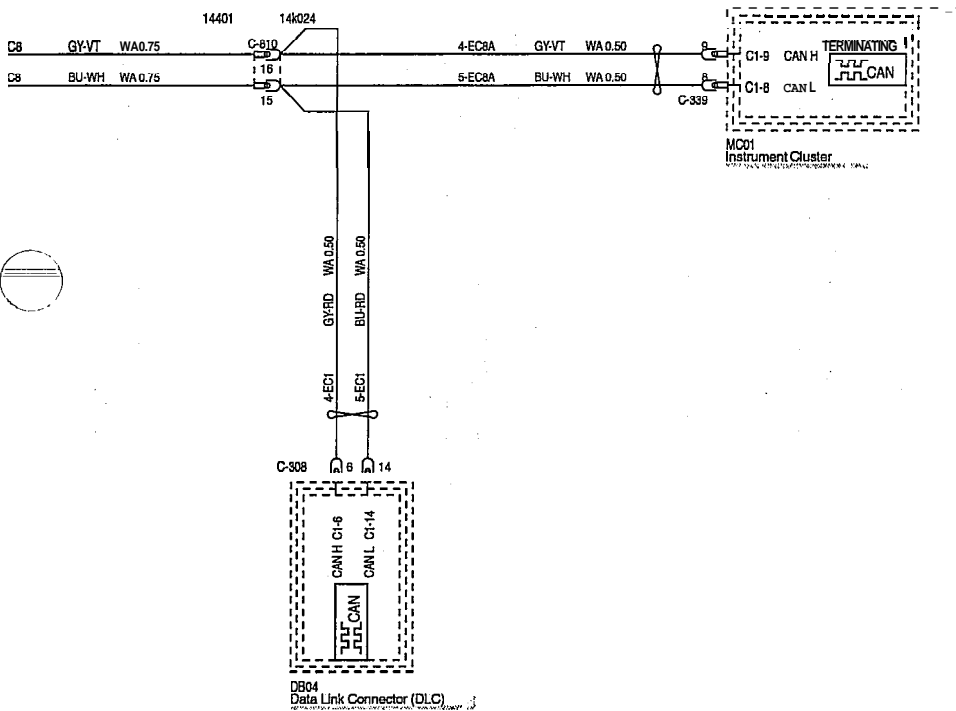
CA01
Anti-Lc
C-304



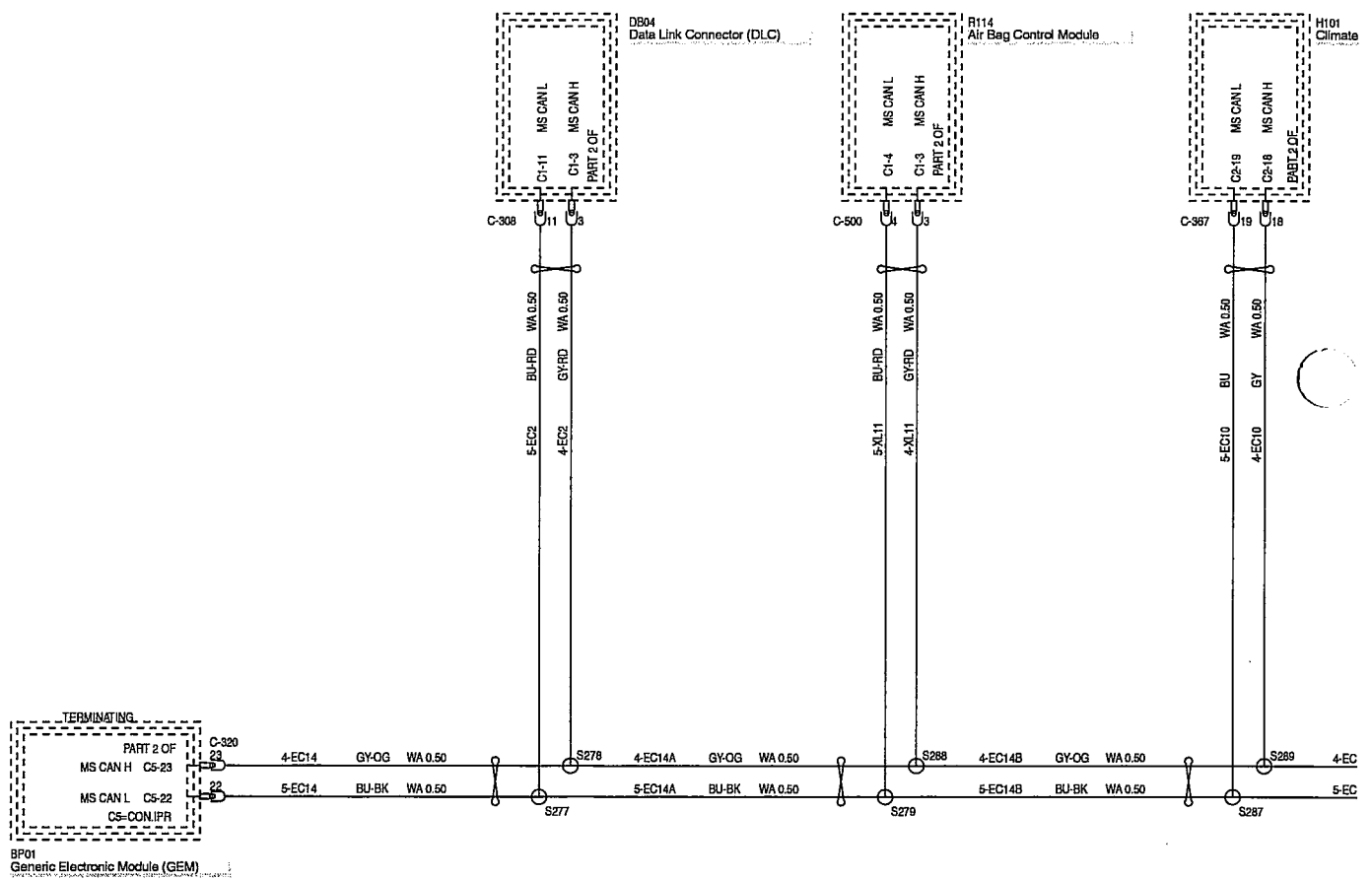




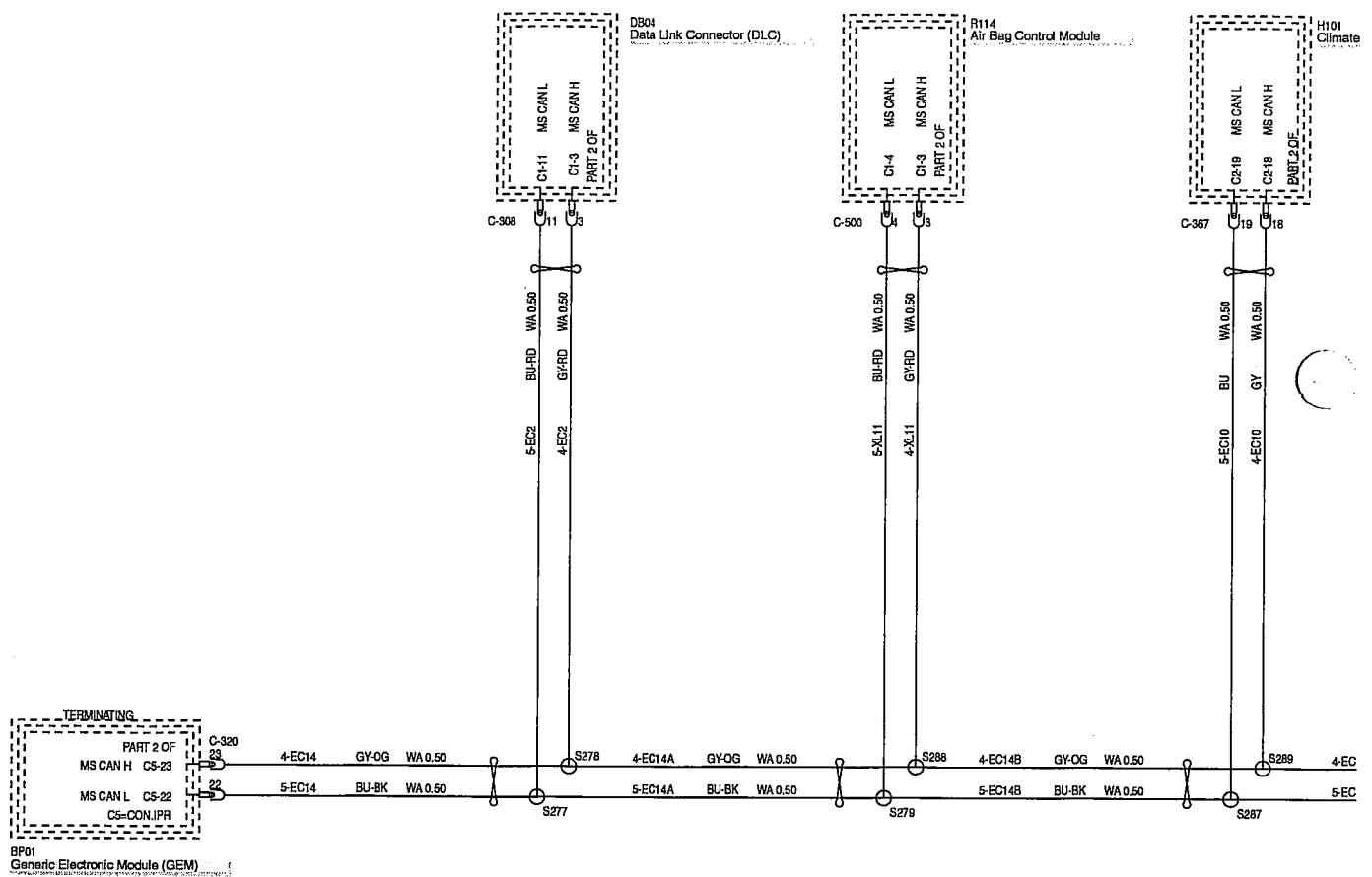
E104
Powertrain Control Module (PCM) - 4-Cylinder Engine

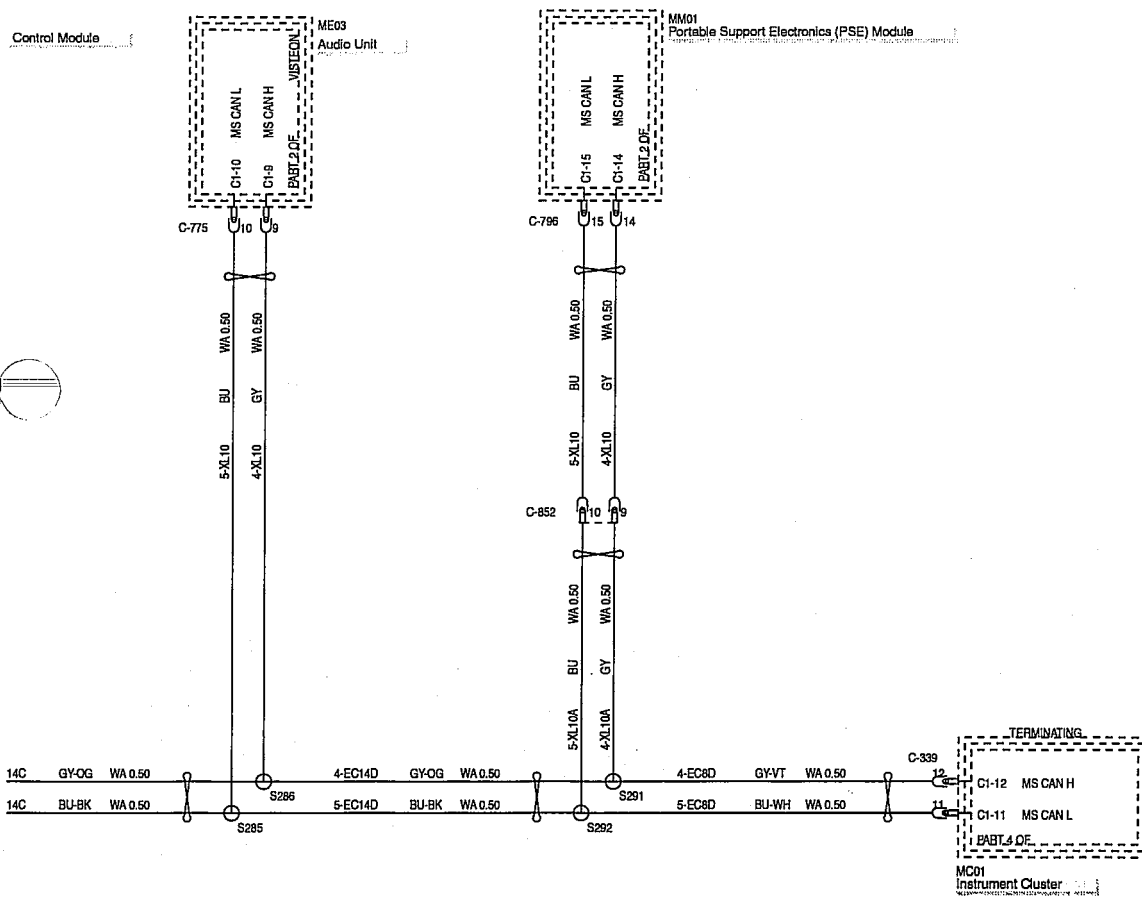


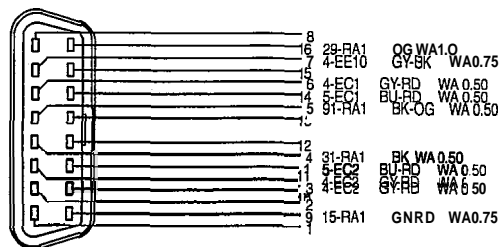
Switch











95GG-14489-ZTA

C-308

TO DATA UNK CONNECTOR

HARNESS 14K024

SECTION 419-01A Anti-Theft - Active

VEHICLE APPLICATION:2006.0 Fiesta

CONTENTS

PAGE

SCHEMATICS

Anti-Theft Alarm System — RHD.....	419-01A-2
Anti-Theft Alarm System — 2.0L Duratec-ST (M14), Vehicles With: Anti-Theft Alarm Horn with Integral Battery.....	419-01A-4

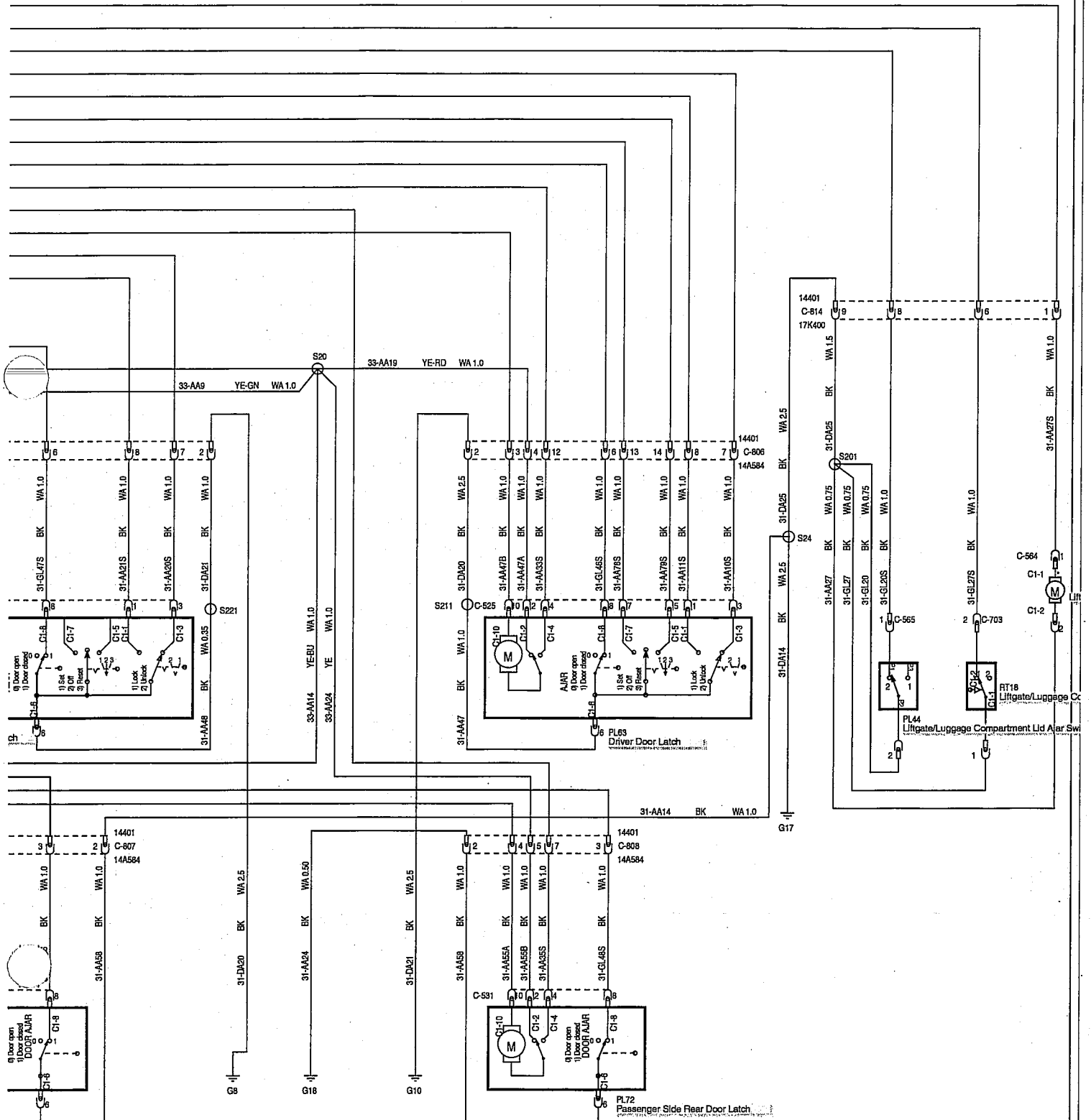
CONNECTORS

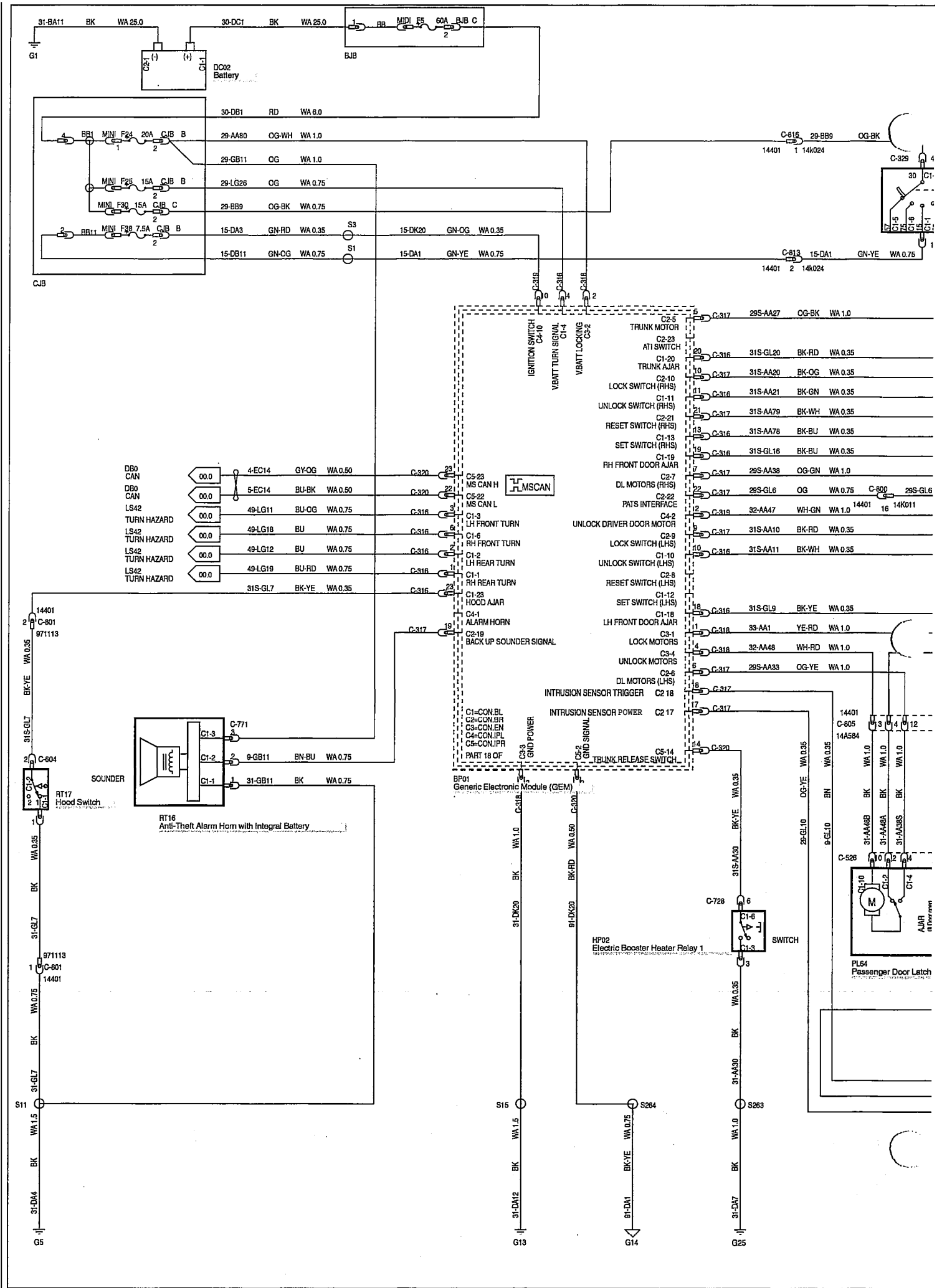
Anti-Theft Alarm Horn.....	419-01A-6
Anti-Theft Alarm Horn with Integral Battery.....	419-01A-7
Liftgate/Luggage Compartment Lid Anti-Theft Inhibit Switch.....	419-01A-8
Liftgate/Luggage Compartment Lid Ajar Switch.....	419-01A-9
Hood Switch.....	419-01A-10





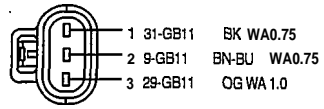
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1 28S-GL26 OG-GN WA 1.0
92BG-14474-ZFA
C-603
TO ANTI THEFT HORN
HARNESS 14401



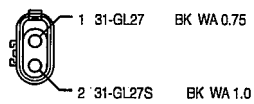
3M5T-14A464-DCA

C-771

TO BATTERY BACKUP SOUNDER

HARNESS 14401



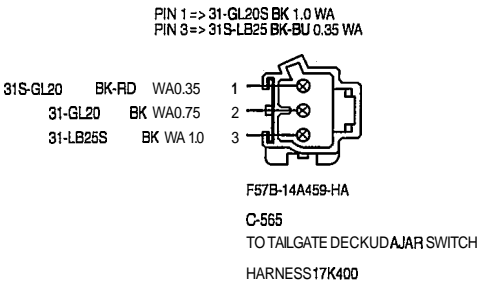


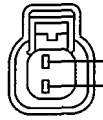
91AG-14489-BBC

C-703

TO TAILGATE DECKLID ANTI THEFT INHIBIT SWITCH

HARNESS 17K400





1	31-GL7	BK	WA0.35
2	31S-GL7	BK-YE	WA0.35

XR3T-14A464-AA

C-604

TO HOOD SWITCH

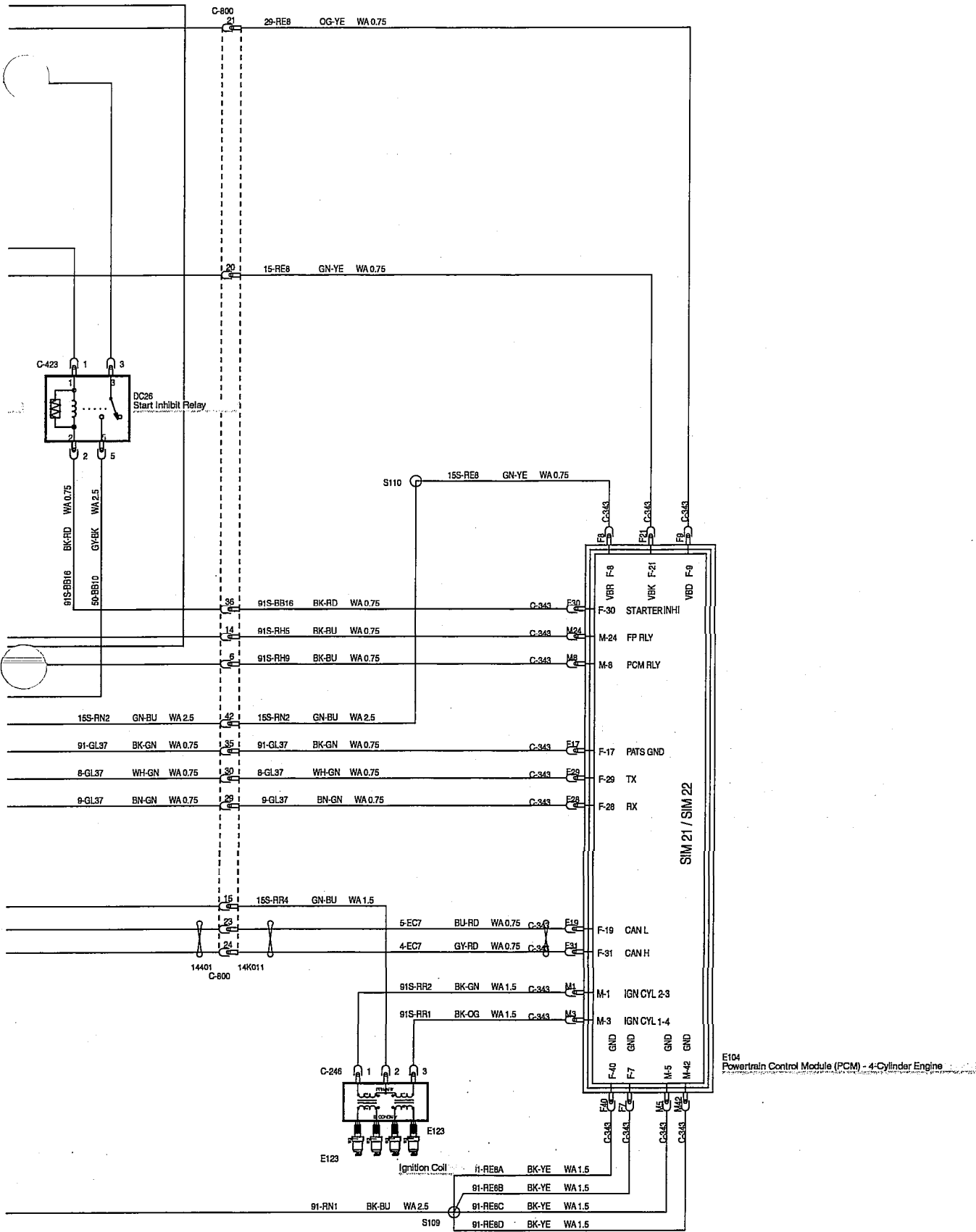
HARNESS 971113

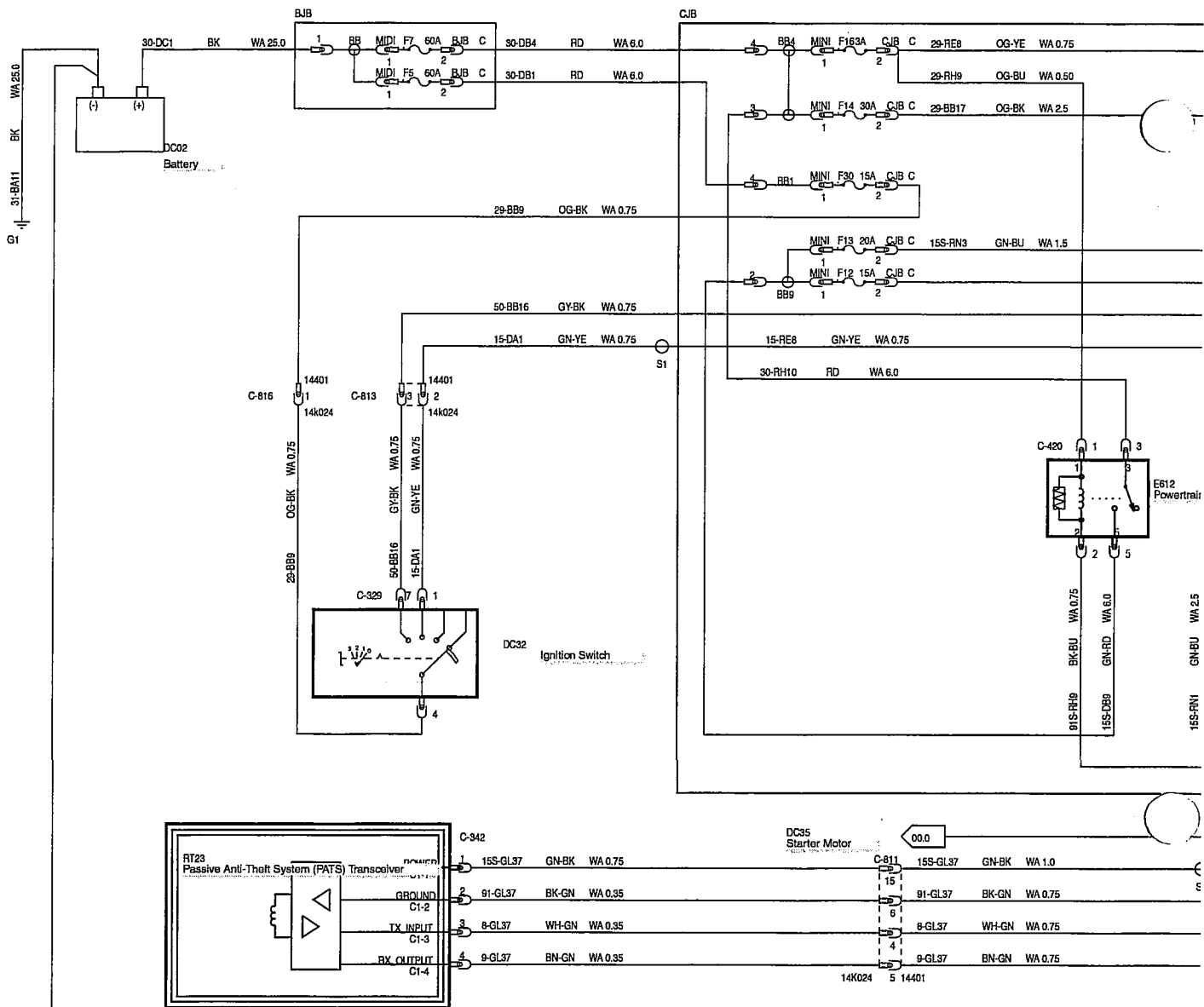
SECTION 419-01B Anti-Theft - Passive

VEHICLE APPLICATION:2006.0 Fiesta

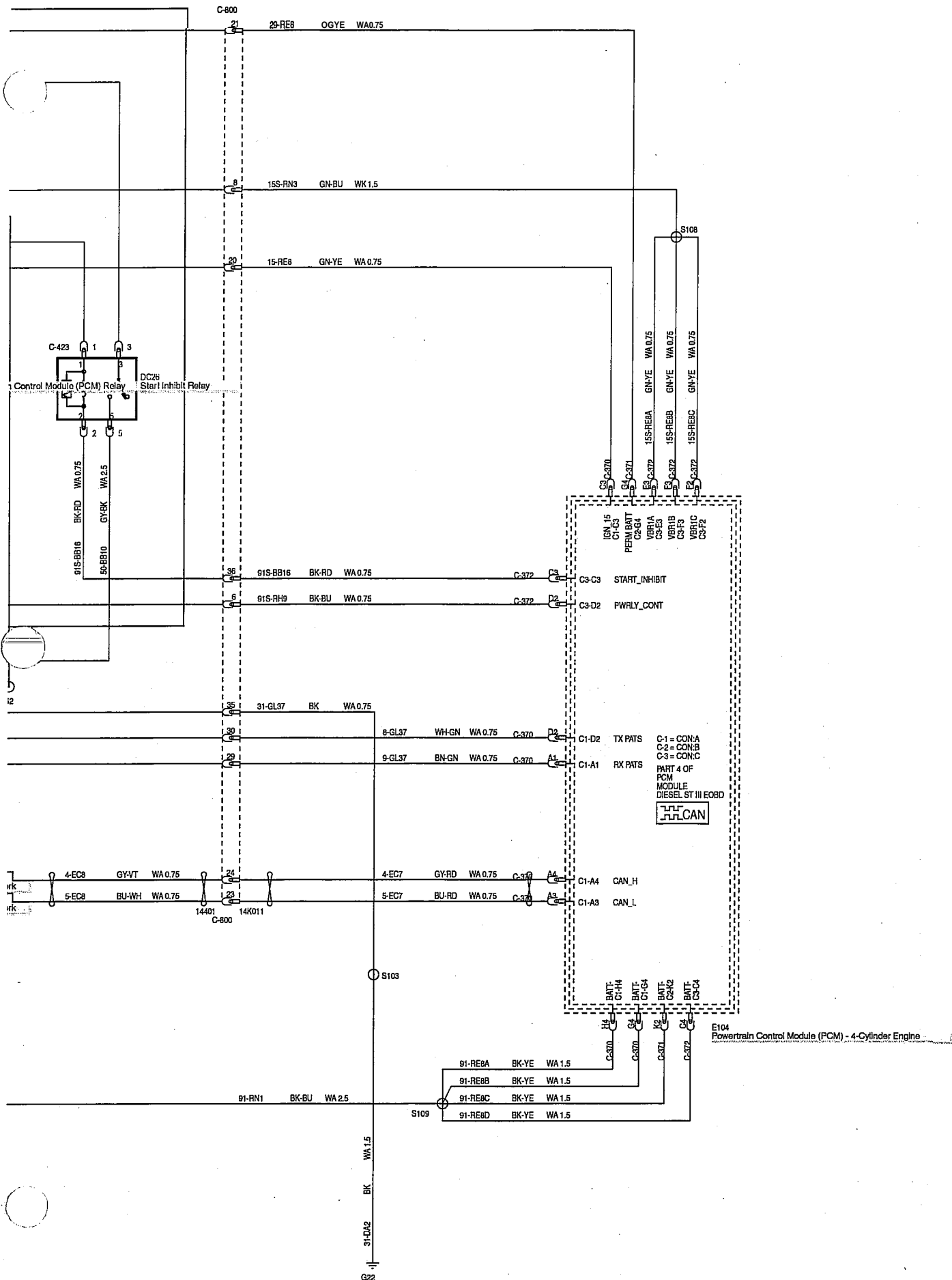
CONTENTS	PAGE
SCHEMATICS	
Passive Anti-Theft System (PATS).....	419-01B-2
Passive Anti-Theft System (PATS) — 1.4L Duratorq-TDCi (DV) Diesel, VIN Plate Emission Level Code: S.....	419-01B-4
Passive Anti-Theft System (PATS) — 1.4L Duratorq-TDCi (DV) Diesel, VIN Plate Emission Level Code: 7.....	419-01B-6
Passive Anti-Theft System (PATS) — 2.0L Duratec-ST (M14).....	419-01B-8
Passive Anti-Theft System (PATS) — 1.6L Duratorq-TDCi (DV) Diesel.....	419-01B-10
CONNECTORS	
Passive Anti-Theft System (PATS) Module.....	419-01B-12

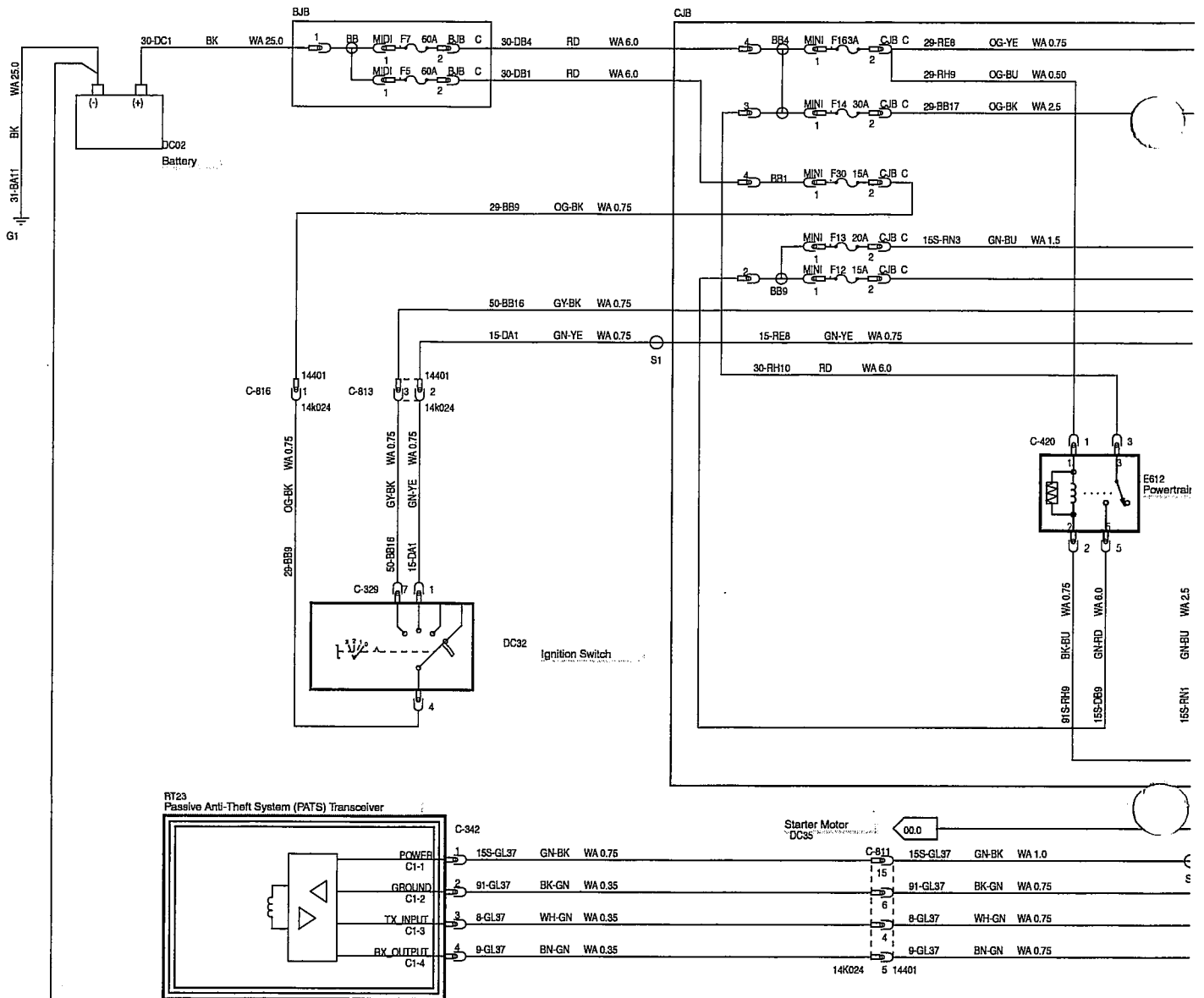


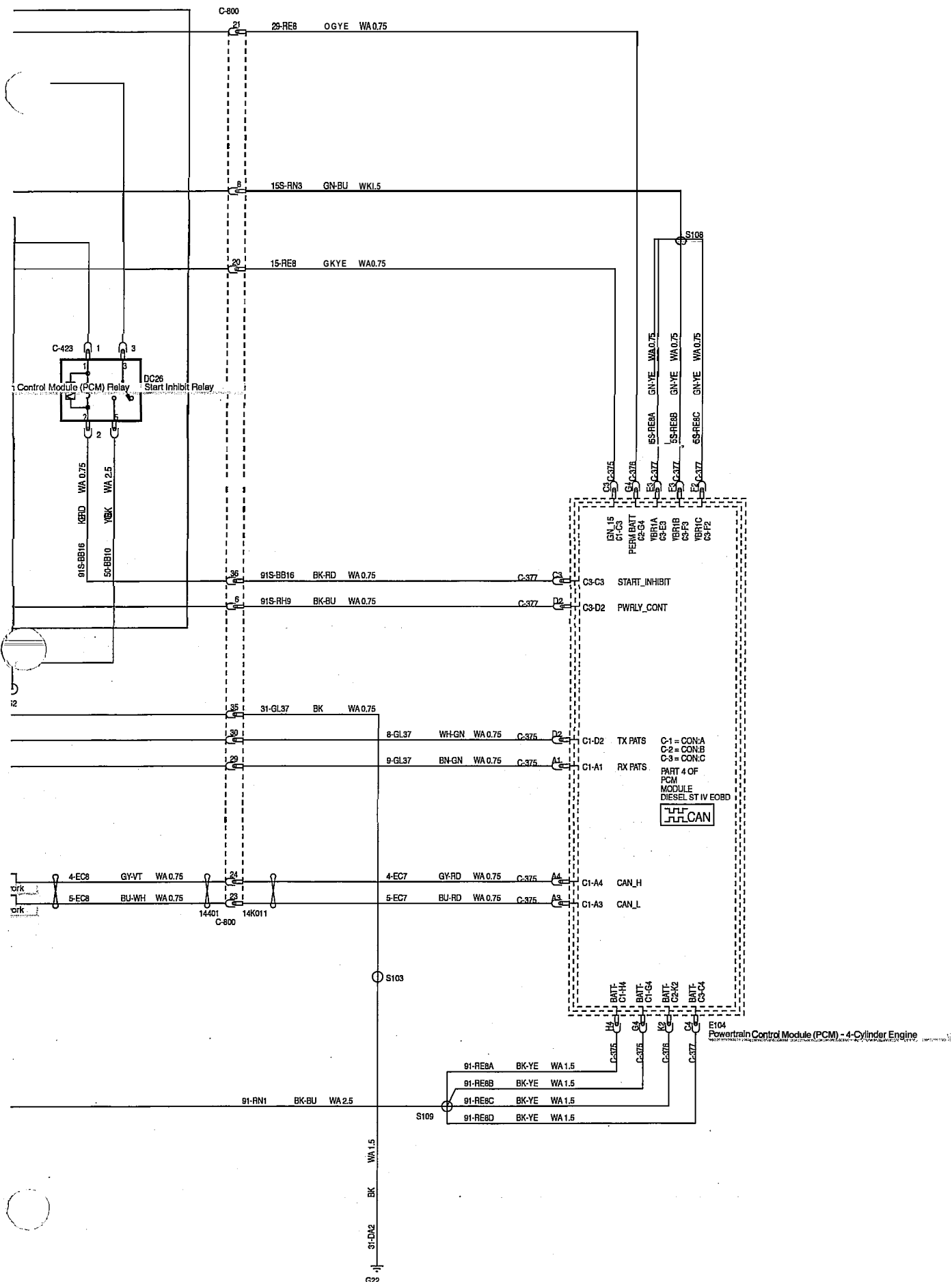


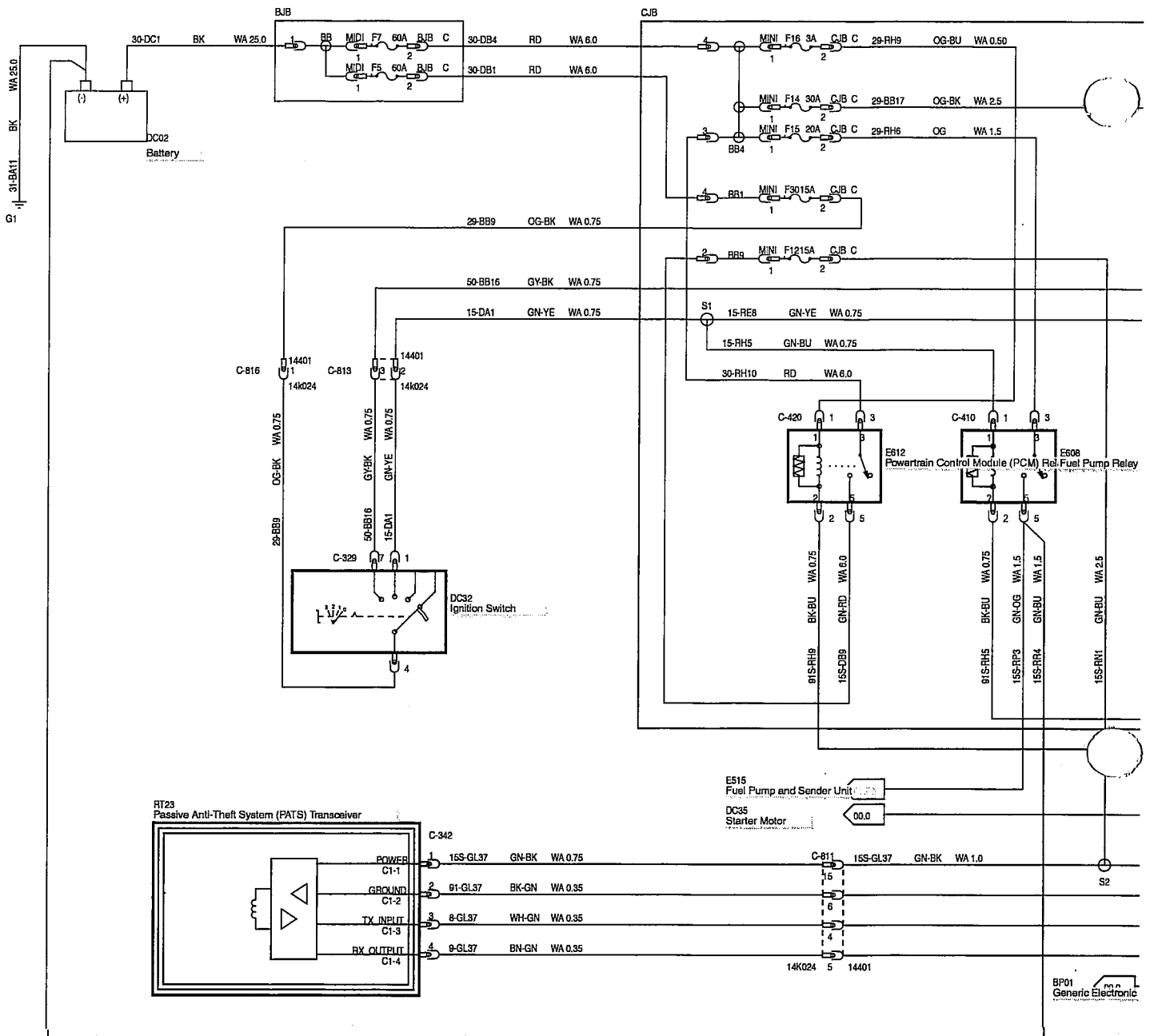


DB0
Communications Netwc
DB0
Communications Netwc



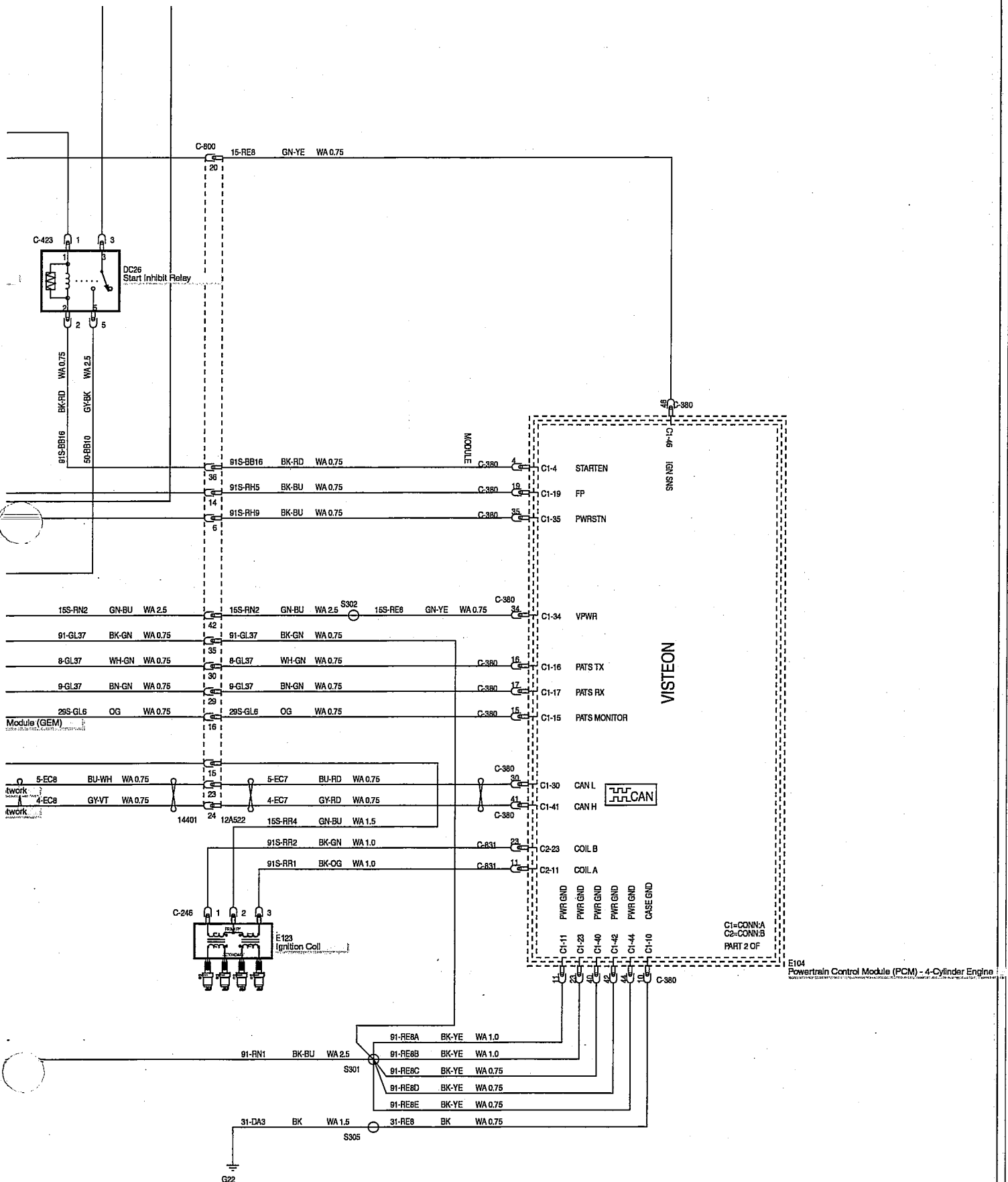


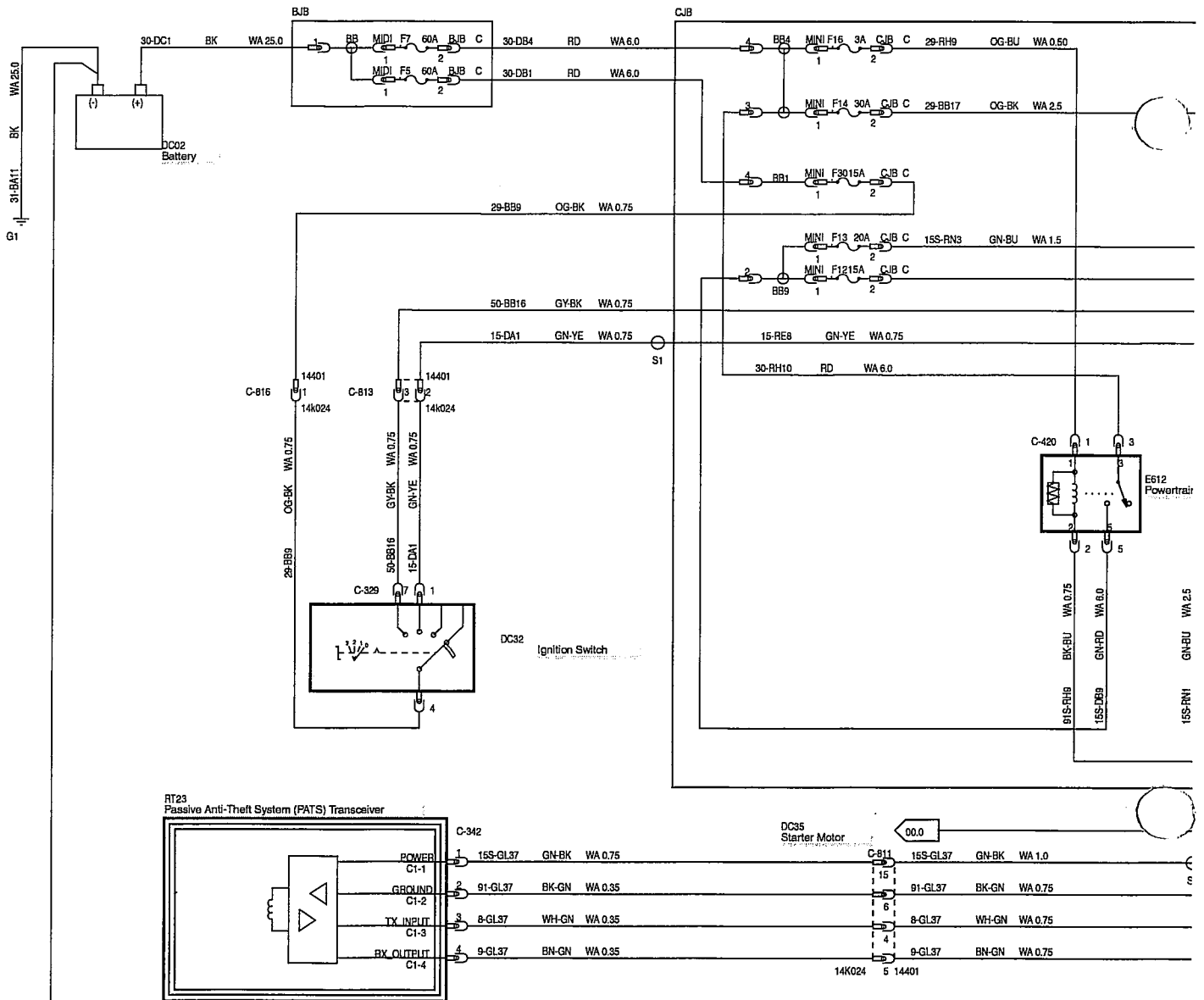




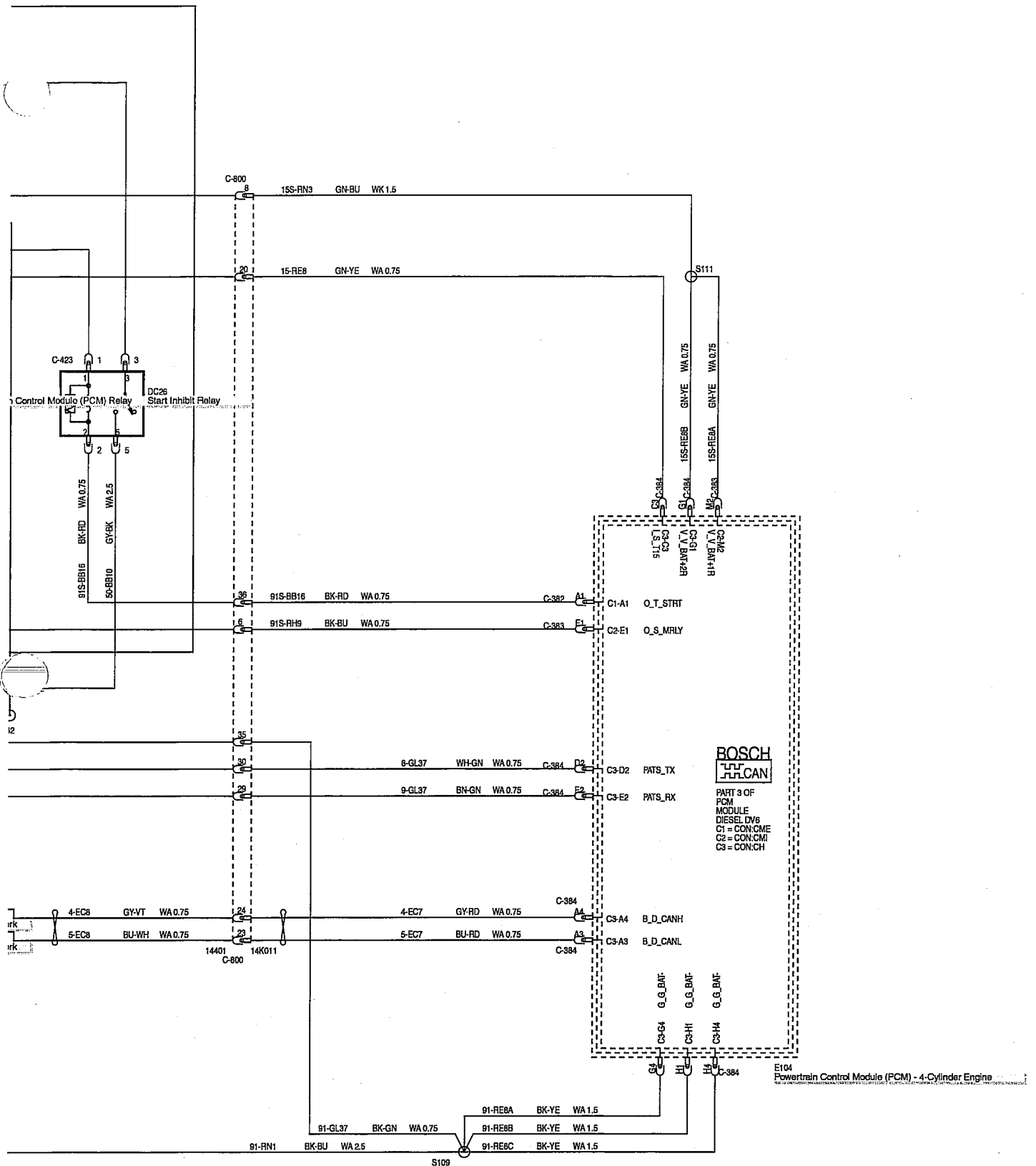
BP01
Generic Electronic

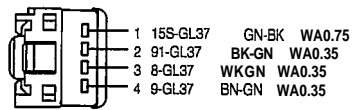
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C-342

TO PASSIVEANTI THEFT TRANSCEIVERMODULE

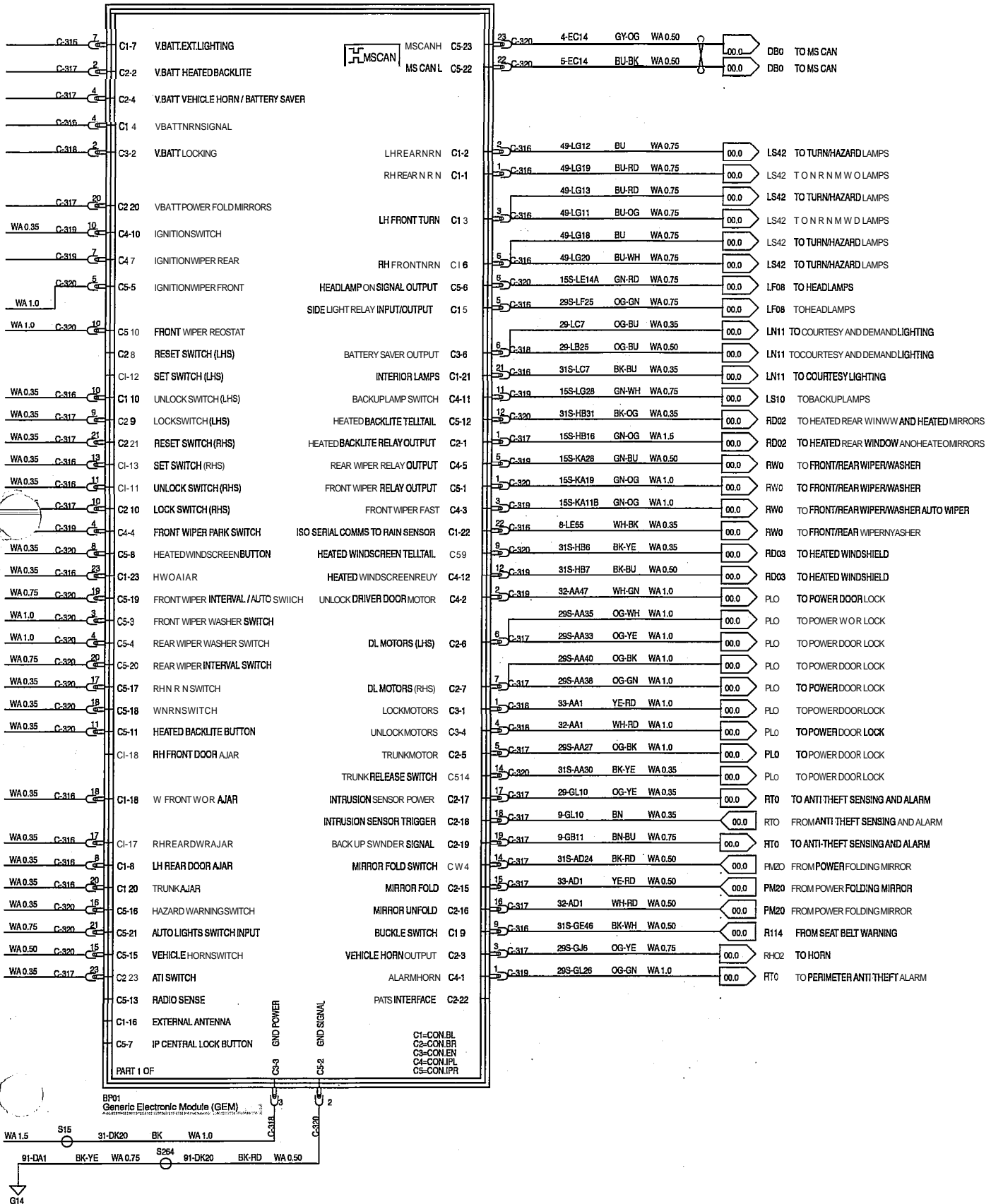
HARNESS 14K024

SECTION 419-10 Multifunction Electronic Modules

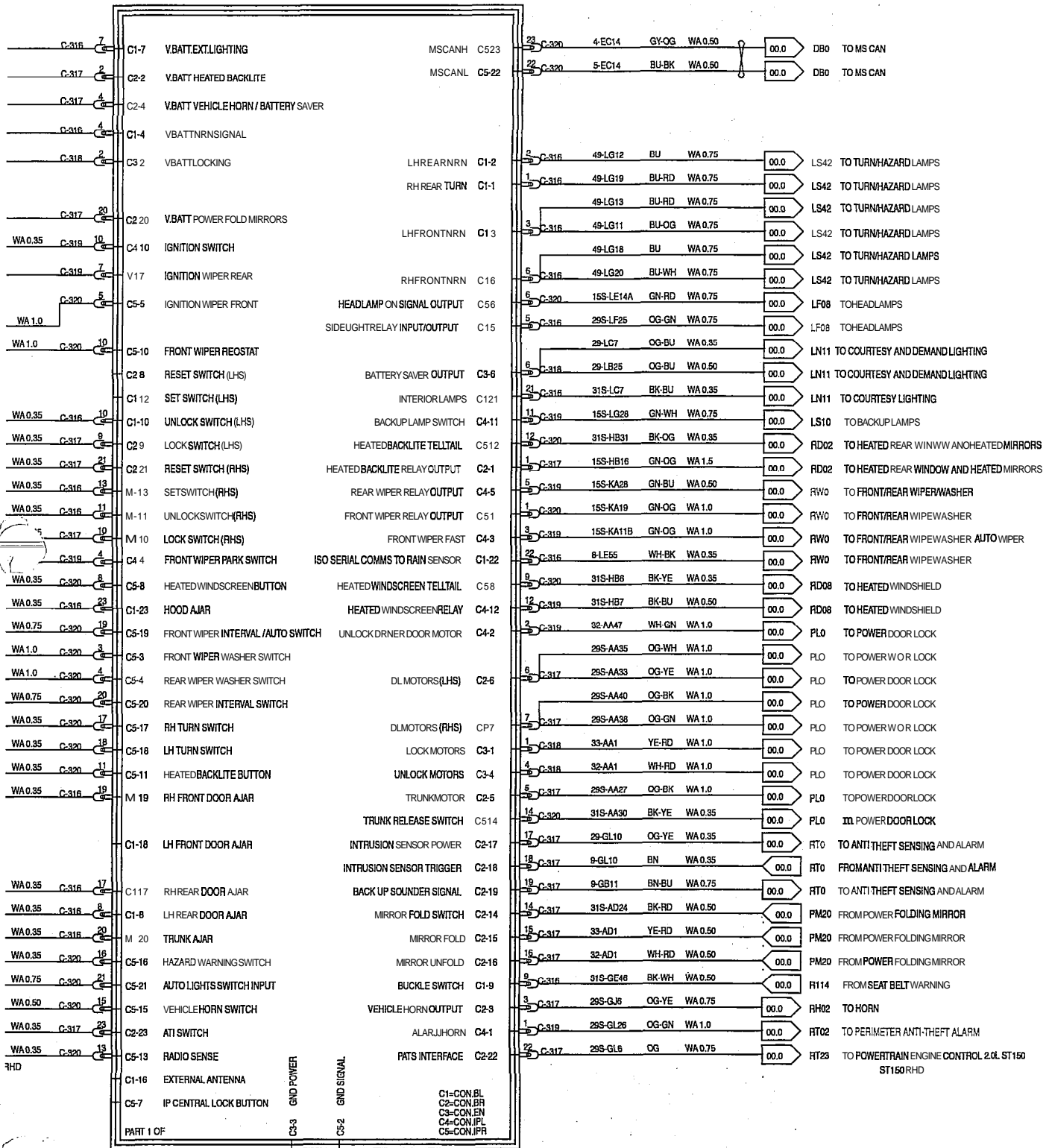
VEHICLE APPLICATION:2006.0 Fiesta

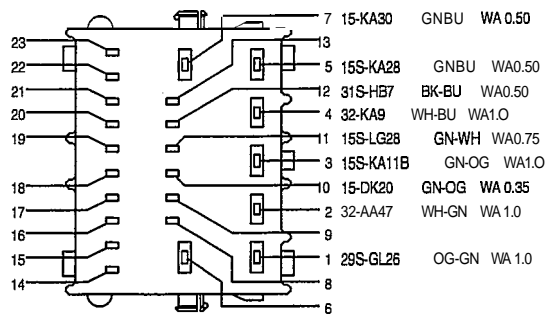
CONTENTS	PAGE
SCHEMATICS	
Generic Electronic Module (GEM) — LHD.....	419-10-2
Generic Electronic Module (GEM) — RHD.....	419-10-4
CONNECTORS	
Generic Electronic Module (GEM).....	419-10-6
Generic Electronic Module (GEM).....	419-10-7
Generic Electronic Module (GEM).....	419-10-8
Generic Electronic Module (GEM).....	419-10-9
Generic Electronic Module (GEM).....	419-10-10











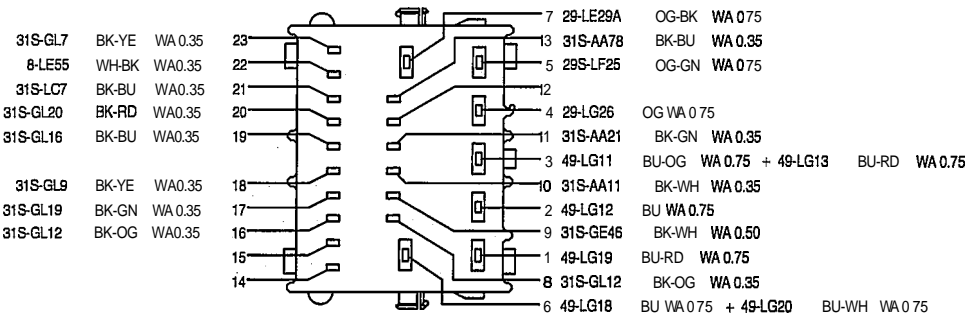
1S7T-14489-HC

C-319

TO GENERIC ELECTRONIC MODULE (PE1)/(IPL)

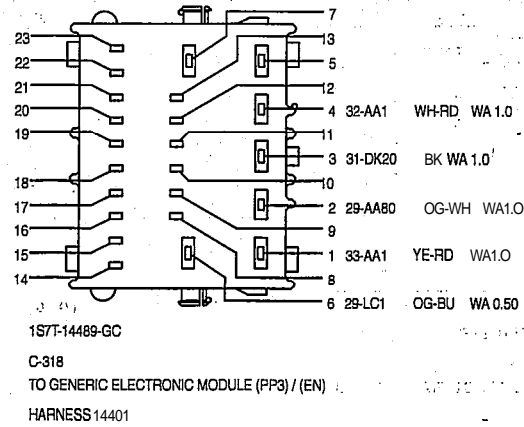
HARNESS 14401

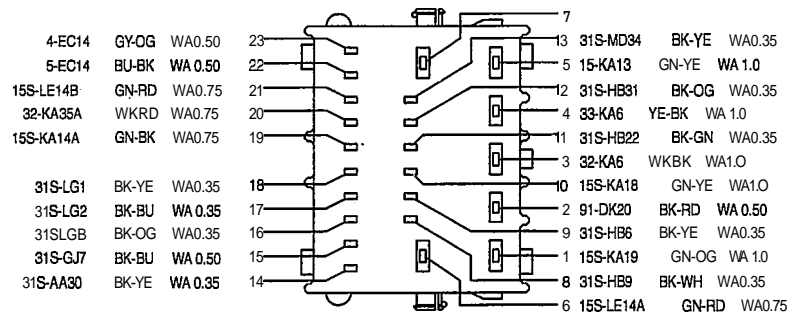
PIN 3 => 49-LG13 BU-RD 0.75 WA + 49-LG11 BU-OG 0.75 WA
PIN 19 => 31S-GL16A BK-BU 0.35 WA
PIN 6 => 49-LG20 BU-WH 0.75 WA + 49-LG18 BU 0.75 WA
PIN 18 => 31S-GL9A BK-YE 0.35 WA



1S7T-14489-EC
C-316
TO GENERIC ELECTRONIC MODULE (PP1) / (BL)
HARNESS 14401

PIN 6 => 29-LC7 OG-BU 0.35 WA + 29-LB25 OG-BU 0.50 WA
 PIN 4 => 32-AA48 WKRD 1.0 WA
 PIN 6 => 29-LB25 OGBU 0.50 WA + 29-LC7 OG-BU 0.35 WA





1STT-14489-JC

C-320

TO GENERIC ELECTRONIC MODULE (PE2) / (IPR)

HARNESS 14K024